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The Mineral Industry of Pennsylvania

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By

ROBERT D. THOMSON

MARY E. OTTE

U. S. Bureau of Mines

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF INTERNAL AFFAIRS
GENEVIEVE BLATT, *Secretary*

TOPOGRAPHIC AND GEOLOGIC SURVEY
CARLYLE GRAY *State Geologist*

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The Mineral Industry of Pennsylvania

This chapter has been prepared under a cooperative agreement for the collection of mineral data, except mineral fuels, between the Bureau of Mines, United States Department of the Interior, and the Pennsylvania Bureau of Topographic and Geologic Survey.

By Robert D. Thomson [1] and Mary E. Otte [2]

PENNSYLVANIA mineral production in 1956 totaled $1 billion—an increase of $119 million (12 percent) over 1955. Of the 25 mineral commodities produced in 1956, 16 increased in value of output. In order of decreasing value, bituminous coal, anthracite, cement, stone, petroleum, natural gas, and clays were the more important economically. In 1956, 72 percent of the value of Penn-

TABLE 1.—Mineral production in Pennsylvania, 1955–56 [1]

Mineral	1955		1956	
	Short tons (unless otherwise stated)	Value	Short tons (unless otherwise stated)	Value
Cement:				
Portland—376-pound barrels	45,526,877	$132,965,136	49,526,640	$153,505,926
Masonry—do	2,562,701	9,003,906	2,437,168	8,881,539
Clays	4,019,909	12,413,093	[2] 4,412,550	[2] 23,781,929
Coal:				
Anthracite	26,204,554	206,096,662	28,900,220	236,785,062
Bituminous	85,713,456	440,451,700	90,286,692	479,437,406
Cobalt (content of concentrate)—pounds	478,840	[3]	533,329	[3]
Gem stones	[4]	60	[4]	100
Gold (recoverable content of ores, etc.)—troy ounces	1,610	56,350	[3]	[3]
Iron oxide pigment (crude)	519	6,714	600	6,600
Lime	1,424,051	17,631,795	1,443,430	18,282,135
Natural gas—million cubic feet	99,172	29,652,000	104,508	33,652,000
Natural-gas liquids:				
Natural gasoline—thousand gallons	4,305	281,000	4,081	251,000
LP-gases—do	995	90,000	1,127	99,000
Peat	23,277	219,628	20,498	213,509
Petroleum (crude)—thousand 42-gallon barrels	8,531	30,200,000	8,230	35,718,000
Sand and gravel	13,312,971	20,511,847	14,047,068	21,320,981
Silver (recoverable content of ores, etc.)—troy ounces	10,379	9,394	[3]	[3]
Slate	186,035	4,421,298	153,824	4,193,559
Stone	44,437,623	[5] 68,918,111	[6] 44,912,987	[6] 73,830,720
Sulfur (recoverable elemental sulfur)—long tons	7,738	263,370	11,350	386,296
Tripoli	[5] 1,090	[5] 5,400	1,030	6,650
Value of items that cannot be disclosed: Copper, iron ore, mica, oystershell (1956), pyrites, sericite, schist stone (dimension basalt 1956), and values indicated by footnote 3		15,819,073		16,201,938
Total Pennsylvania [7]		[8] 969,910,000		1,088,867,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers), except that fuels are strictly production.
[2] Excludes kaolin; value included with items that cannot be disclosed.
[3] Figure withheld to avoid disclosing individual company confidential data.
[4] Weight not recorded.
[5] Final figure. Supersedes figure given in commodity chapter.
[6] Excludes certain stones, value for which is included with items that cannot be disclosed.
[7] The total has been adjusted to eliminate duplicating the value of clays and stone in manufacturing lime and cement.
[8] Revised figure.

[1] Acting chief, Division of Mineral Industries, Region V, Bureau of Mines, Pittsburgh, Pa.
[2] Statistical clerk, Region V, Bureau of Mines, Pittsburgh, Pa.

sylvania's mineral output was attributable to fuels, 26 percent to nonmetals, and 2 percent to metals.

Production of one or more mineral commodities was reported in every county except Pike. Major producing counties (in order of decreasing value) were Washington, Luzerne, Northampton, Schuylkill, Cambria, Greene, and Allegheny. Washington County was the leading producer of bituminous coal, Luzerne of anthracite, Northampton of cement, Montgomery of stone, Clearfield of clays, Bucks of sand and gravel, and Centre of lime.

REVIEW BY MINERAL COMMODITIES

MINERAL FUELS

Anthracite.—Anthracite output in Pennsylvania in 1956 increased 10 percent in tonnage and 15 percent in value over 1955. The average value per net ton increased from $7.86 in 1955 to $8.19 in 1956. Similar to the trend in 1955, the percentage of anthracite produced underground decreased from 55 percent to 52. Output from strip pits represented 29 percent of the total output, remaining approximately the same as in 1955. Production from culm banks and dredges totaled 19 percent compared with 15 in 1955.

Luzerne County again led in anthracite production, with 34 percent of the tonnage and 38 percent of the value. Producers in Luzerne and Schuylkill Counties supplied 65 percent of the total tonnage and 67 percent of the total value. Other productive counties were Carbon, Columbia, Dauphin, Lackawanna, Lancaster, Lebanon, Northampton, Northumberland, Snyder, and Sullivan. Berks County was the only county in which anthracite was produced in 1955 and not in 1956.

The fatality rate for the anthracite industry was slightly better in 1956. Fifty-six deaths were reported in 1956—7 percent lower than in 1955. Fatal and nonfatal injuries totaled 3,316 in 1956, compared with 3,090 in 1955. Injury rates in 1956 were 1.30 per million man-hours for fatal injuries and 75.80 per million man-hours for nonfatal injuries. Injury rates per million tons were 1.96 for fatal and 114.07 for nonfatal injuries. These injury rates were based on a total of 25,800 men working 43,010,000 man-hours to produce 28,578,000 short tons.

Bituminous Coal.—The production of bituminous coal in Pennsylvania—by far the most important single mineral commodity in the State (comprising 44 percent of the total State value)—increased 5 percent in tonnage and 9 percent in value compared with 1955. The average value per ton in 1956 was 17 cents greater than in 1955, totaling $5.31.

Bituminous coal was produced at underground, strip, and auger mines. In all, 997 underground mines, with a production of 1,000 tons or more, represented 74 percent of the total output. Of the total underground production, 97 percent was cut by machine, including the 26 percent mined by continuous miners, while the remainder was cut by hand or shot from the solid. Locomotives, shuttle cars, rope hoist, animals, and mother conveyors were used for underground haulage. Ninety-one percent of the underground output was loaded mechanically. Mobile loaders were the primary moving device—

loading into shuttle cars (67 percent), into mine cars (30 percent), and onto conveyors (3 percent). During the year there were in operation 478 shuttle cars, 254 mine cars, and 37 conveyors. Preparation plants active in 1956, totaled 140; they produced 50 million short tons of clean coal, of which 93 percent came from underground mines and 7 percent from strip mines. Of the total production mechanically cleaned, 89 percent was wet washed (15 percent by jigs and 74 percent by other wet methods) and 11 percent cleaned by pneumatic methods.

In all, 680 strip mines were active during the year producing 24 million short tons of coal. The average value per ton for strip mine coal was $3.90. In 1956 electric, diesel-electric, diesel, and gasoline power shovels and draglines were used. Of the 1,443 shovels and draglines in operation in 1956, 1,072 were power shovels, of which 1,002 had a capacity of less than 3 cubic yards, 63 of 3 to 5 cubic yards, 4 of 6 to 12 cubic yards, and 3 of over 12 cubic yards. The draglines totaled 371, of which 176 were less than 3 cubic yards capacity; 132, 3 to 5; 59, 6 to 12; and 4, over 12 cubic yards.

Less than 1 percent of Pennsylvania's bituminous-coal production came from 33 operating auger mines. The average price for coal produced from auger mines was $3.33.

In all, 52 fatal and 2,420 nonfatal injuries were reported for bituminous-coal mines operating in Pennsylvania in 1956. The injury rate for fatal injuries was 0.61 per million man-hours and 0.58 per million short tons, compared with 28.54 for nonfatal injuries and 27.10, respectively. The average number of men working in bituminous-coal mines in 1956 was 47,400 working 10,697,000 man-days or 84,790,000 man-hours to produce 89,300,000 short tons.

Coke and Coal Chemicals.—The work stoppage in the steel industry from July 1 to August 5 adversely affected coke-oven operations in Pennsylvania in 1956, with production increasing only 1 percent. However, Pennsylvania ranked first in quantity and total value for both beehive and oven coke produced in the United States, accounting for 27 percent of the output from slot-type ovens and 81 percent from beehive ovens. Fourteen plants, operating 3,976 slot-type ovens, carbonized 27,929,000 net tons of coal to produce 19,098,000 net tons of oven coke. A total of 3,203,000 net tons of coal was carbonized in 7,873 beehive ovens to produce 2,006,000 net tons of beehive coke. The average value for oven coke was $16.58 compared with $13.82 for beehive coke. Coke produced in Pennsylvania was shipped to blast-furnace plants, foundries, producer-gas plants, water-gas plants, other industrial plants, and for residential heating. Ninety-six percent of the coke was consumed at blast furnaces and 1 percent by foundries.

Over 289 billion cubic feet of coke-oven gas was produced in Pennsylvania coke ovens in 1956. Of this total, coke producers used 38 percent in heating the ovens, 4 percent under boilers, and 53 percent in steel or allied plants. Four percent of the gas was sold, and the remainder was waste gas. The 14 active plants produced 573 million pounds of ammonia as sulfate and 636,000 pounds as liquor. Also produced was 268 million gallons of coke-oven tar and 88 million gallons of crude light oil from which was made benzene, toluene, xylene, and solvent naphtha.

Peat.—Pennsylvania dropped from fifth to sixth place among the 17 peat-producing States in 1956, with a total yield of 20,000 short tons valued at $214,000. Output of peat in 1956 decreased 12 percent in tonnage and 3 percent in value below 1955. Varieties of peat produced were humus, moss, and reed sedge. Luzerne County ranked first in production, followed by Mercer and Erie Counties.

Petroleum and Natural Gas.—A total of 378 wells, exclusive of those drilled for gas storage and secondary-recovery purposes, was completed in Pennsylvania in 1956.[3]

Of these, 185 gas wells, 19 oil wells, and 47 dry holes were drilled in the shallow-sand belt of western Pennsylvania. In 1956, 127 deep wells (Middle Devonian or deeper) were completed; 81 of the deep wells were gas, and 46 were dry holes.

The 185 new shallow-sand gas wells had an initial open-flow capacity of 86,913 million cubic feet per day, compared with a capacity of 53,468 for the 214 gas wells completed in 1955. The 19 new shallow-sand oil wells completed in 1956 had a total initial production of 53.4 barrels per day as compared with an initial production of 80 barrels for the 17 new oil wells completed in 1955. The greatest activity in the shallow-sand gas belt occurred in Armstrong County, where 78 new wells (all gas) were completed; 64 of them were hydraulically fractured. In all 43 wells were completed in Jefferson County, 27 in Westmoreland, 23 in Indiana, 16 in each of Clarion and Forest, 14 in McKean, 9 in Washington, 6 in each of Allegheny and Butler, 5 in Fayette, 2 in each of Clearfield, Greene, and Potter, and 1 each in Elk and Erie.

Of the 143 deep sand wells drilled, 81 were gas wells, 46 dry holes, and 16 for gas storage. The most activity was in the Meade field and surrounding area in Erie County, where 35 gas wells and 17 dry holes were drilled. Five gas wells and three dry holes were drilled in the Glenlick pool of northeastern Clinton and adjacent southeastern Potter County. Four dry holes and 10 wells for gas storage also were drilled in Potter County. Drilling activity in Clearfield County was centered in 3 areas; 22 gas wells and 4 dry holes were drilled in the Rockton field, 6 gas wells and 1 dry hole in the Reed-Deemer field, and 1 wildcat well about 7 miles northeast of the Rockton field.

Most activity in Indiana County was in the Jacksonville field, where four gas wells were drilled. Two other gas wells were completed in this county, one in Armstrong Township and the other in Brush Valley Township. Drilling occurred in the southwestern corner of Jefferson County in the Reed-Deemer field, and a new dry hole was completed in Gaskill Township. In Elk County 1 gas well was completed in the Benezette-Driftwood field, and 4 gas wells and 2 dry holes were completed in the Hicks Run Pool area. The first wildcat well in southern Westmoreland County was completed, and production was begun in the St. Boniface Chapel Pool area. Drilling also occurred in 10 other counties, with 4 dry wells completed in Crawford, 2 in Bradford, and 1 each in Bedford, Centre, Lackawanna, Lawrence, McKean, Mercer, Snyder, and Tioga.

The proved recoverable crude-oil reserve in Pennsylvania was estimated at 132 million barrels as of January 1, 1957—8 million

[3] Lytle, W. S., Developments in Pennsylvania in 1956: Bull. Am. Assoc. Petrol. Geol., vol. 41, No. 6, June 1957, pp. 1010–1020.

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TABLE 2.—Natural-gasoline and cycling plants in 1956

(Daily capacity in gallons)

Company	Location	County	LP-gas mixture	Natural gasoline and other products	Total	Status	Type
Biery & Breene	Venus	Venango		80	80	Operating	Complete.
Equitable Gas Co	Rogersville	Greene		10,000	10,000	do	Absorption.
The Mars Co	Kane	McKean		2,000	2,000	do	Do.
Do	Oil City	Venango		2,000	2,000	do	Do.
Do	Van	do	3,000	7,500	10,500	do	Do.
Pennsylvania Gas Co	Sheffield	Warren		4,000	4,000	do	Do.
The Peoples Natural Gas Co	Brave	Greene		20,000	20,000	do	Do.
Quaker State Oil Refining Co	Noblestown	Allegheny		300	300	do	Complete.
Do	do	do		700	700	do	Do.
Waverly Oil Works Co	McDonald	Washington		533	533	do	Do.
Do	do	do		733	733	do	Do.
Total			3,000	47,846	50,846		

TABLE 3.—Capacity of petroleum refineries and cracking plants in 1956

(Barrels per day)

Company	Location	County	Type of plant	Crude oil capacity			Cracked gasoline capacity		
				Operating	Shut down	Building	Operating	Shut down	Building
East:									
Atlantic Refining Co	Philadelphia	Philadelphia	Complete	148,000			34,300		
Gulf Oil Corp	Girard Point	do	Skimming, cracking, and lube.	183,000	[1] 39,000		48,840	[1] 4,600	1,650
Sinclair Refining Co	Marcus Hook	Delaware	Skimming and cracking	102,000		12,000	40,600		
Sun Oil Co	do	do	Complete	145,000			58,100		
West:									
Franklin Refinery Division of L. Sonneborn Sons, Inc.	Franklin	Venango	Skimming and lube	1,650					
Kendall Refining Co	Bradford	McKean	Complete	4,800			2,200		
Pennsylvania Refining Co	Karns City	Butler	Skimming and lube	2,000					
Pennzoil Division of South Penn Oil Co.	Rouseville	Venango	Complete	10,000	3,000		3,413	[2] 2,068	1,995
Quaker State Oil Refining Corp	Emlenton	do	do	2,540			1,592		
Do	Farmers Valley	McKean	do	4,000			2,500		
United Refining Co	Warren	Warren	do	8,500	[1] 1,500		4,600		2,500
Valvoline Oil Co. Division of Ashland Oil & Refining Co.	Freedom	Beaver	Skimming and lube	5,500					
Wolf's Head Oil Refining Co., Inc	Reno	Venango	Complete	2,500			1,460		
Total				619,490	43,500	12,000	197,605	6,668	6,145

[1] Equipment considered inoperable without extensive reconditioning.
[2] Includes 1,432 barrels daily considered inoperable.

barrels less than was reported for 1955. Gas producers in Pennsylvania estimated reserves of January 1, 1957, as totaling 760 billion cubic feet—6 billion feet greater than was reported on January 1, 1956.

Natural-Gas Liquids.—Natural-gas liquids were produced in Pennsylvania in 1956 with a 2-percent decrease in output from 1955. Eleven natural-gasoline and cycling plants were active in 1956, with a capacity (as of January 1, 1956) of 48,000 gallons a day for natural gasoline and other products and 3,000 for LP-gas mixture. Ninety-five percent of the capacity was designated as absorption and 5 percent as compression. Reserves of natural-gas liquids (includes condensate, natural gasoline, and liquefied petroleum gases), as of January 1, 1957, were estimated to total 3.1 million barrels—an increase of 76,000 barrels over that reported at the end of 1955.

Thirteen petroleum refineries were active in Pennsylvania in 1956, with an operating capacity of 619,000 barrels per day and an additional 44,000 barrels not in operation and 12,000 to be built during 1956. Capacity of plants for producing cracked gasoline in Pennsylvania, as of January 1, 1956, totaled 198,000 barrels per day operating, 7,000 shut down, and 6,000 to be built.

NONMETALS

Cement.—The cement industry in Pennsylvania in 1956 again set a new record, with shipments totaling 52 million barrels valued at $162 million. The industry followed a national trend and increased 8 percent in quantity and 14 percent in value over 1955. Demand was high during the year, and the cement industry continued expansion on the strength of the increasing demands by the construction industry for cement. Cement prices were increased by Pennsylvania producers on January 1 and October 1, with increases ranging from $0.15 to $0.25 a barrel.

Pennsylvania ranked first in the United States in the production of cements, with 16 percent of the total shipments of cement produced in 1956.

Seventeen companies were active in eight counties. A total of 24 plants produced portland cement in 1956, with 11 plants in Northampton County, 5 in Lehigh County, 2 each in Allegheny and Lawrence Counties, and 1 each in Berks, Butler, and York Counties. Lehigh and Northampton Counties continued to be the largest centers of production, supplying 67 percent of the portland-cement shipments in 1956. Capacity at the 24 plants was reported to be 53 million barrels—63 percent by the dry process and 37 percent by the wet process. The industry reported consuming 1.1 billion kilowatt-hours of electrical energy, of which 720 million kilowatt-hours was purchased from public-utility companies.

Of the plants producing portland cement, 21 also produced masonry cement.

Clays.—Industry established an alltime high in the production of fire clay and miscellaneous clay from Pennsylvania pits in 1956. Pennsylvania ranked second in the United States in the production of fire clay and sixth in miscellaneous clay. The output of fire clay in 1956 was 13 percent greater in tonnage and 75 percent greater in

TABLE 4.—Shipments of portland cement, 1955–56, by counties

County	1955		1956	
	Barrels	Value	Barrels	Value
Lehigh	8,005,405	$23,098,410	8,700,326	$26,513,074
Northampton	22,874,741	66,864,557	24,728,213	76,401,740
Allegheny, Lawrence, Butler	9,664,645	27,301,954	10,629,275	32,590,052
Berks, Montgomery, York	4,982,086	15,700,215	5,468,826	18,001,060
Total	45,526,877	132,965,136	49,526,640	153,505,926

value compared with 1955 and was 237,000 and $6.4 million greater than the previous high in 1951. Production of miscellaneous clay also increased, showing an 8-percent growth in tonnage and 202 percent in value (in certain instances value for processed clay was used). The 1956 production for miscellaneous clay was 20,000 tons and $3.6 million greater than the 1951 previous high. The increased output of the clay industry was due principally to increased demand for refractory materials by the steel industry, glass industry, and foundries and a greater use of clays in the production of cement, heavy clay products, and lightweight aggregate.

Fire clay was used principally in producing firebrick and block and heavy clay products, with smaller quantities used in producing miscellaneous refractories, art pottery, and flowerpots. The majority of the miscellaneous clay was used in producing heavy clay products and portland cement. Smaller quantities of miscellaneous clay were used in manufacturing art pottery, high-grade tile, refractories for foundry and steel works, lightweight aggregate, and filler for linoleum and paint.

TABLE 5.—Clays sold or used by producers in 1955–56, by kinds and uses, in short tons

Use	Fire clay		Miscellaneous clay	
	1955	1956	1955	1956
Refractories:				
Bauxite, high-alumina brick	(1)	8,463		
Firebrick and block	[2] 967,328	1,089,738		
Fire clay mortar	29,811	27,631		
Foundries and steelworks	118,086	136,753	(1)	(1)
Miscellaneous refractories	139,604	158,672		
Heavy clay products	902,563	995,360	1,503,611	1,571,625
Paint fillers or extenders			380	360
Lightweight aggregate			117,308	(1)
Cement	[2] 29,521		170,478	204,668
Undistributed	[3] 12,375	[3] 26,369	[4] 28,844	[4] 192,911
Total	2,199,288	[5] 2,442,986	1,820,621	1,969,564

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes kaolin.
[3] Includes fire clay for art pottery and stoneware, high-alumina brick, and glass refractories.
[4] Includes miscellaneous clay for art pottery and stoneware, high-grade tile, foundries and steelworks, linoleum and oilcloth, miscellaneous filler, lightweight aggregate, and other uses.
[5] Incomplete total, excludes kaolin.

TABLE 6.—Clays sold or used by producers in 1956, by counties

County	Short tons	Value	Types of clay
Adams	68,100	$34,050	Miscellaneous clay.
Allegheny	145,860	(1)	Do.
Armstrong	227,962	2,621,549	Fire clay.
Beaver	630,375	2,395,042	Fire clay, miscellaneous clay.
Blair	19,796	176,688	Do.
Butler	19,809	(1)	Do.
Cambria	69,109	582,283	Do.
Centre	96,866	976,741	Fire clay.
Chester	58,241	(1)	Miscellaneous clay.
Clarion	126,979	1,316,686	Fire clay, miscellaneous clay.
Clearfield	630,209	5,589,316	Do.
Clinton	30,779	193,604	Do.
Columbia	14,800	(1)	Miscellaneous clay.
Fayette	169,832	1,401,025	Fire clay, miscellaneous clay.
Greene	4,062	(1)	Miscellaneous clay.
Indiana	34,139	153,625	Fire clay.
Luzerne	49,905	49,905	Miscellaneous clay.
Lycoming	360	6,455	Do.
Montgomery	78,672	106,186	Fire clay, miscellaneous clay.
Schuylkill	104,711	(1)	Miscellaneous clay.
Washington	52,938	69,813	Do.
Westmoreland	25,427	(1)	Fire clay, miscellaneous clay.
Undistributed [2]	1,753,619	8,108,961	
Total [3]	4,412,550	23,781,929	

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties that must be concealed as indicated by footnote 1 and for the following counties: Berks, Bucks, Carbon, Dauphin, Elk, Huntingdon, Jefferson, Lancaster, Lawrence, McKean, Northumberland, Snyder, Somerset, and York.
[3] Incomplete total; excludes kaolin.

Kaolin was used in producing portland cement and firebrick and block, with use in producing cements being more important.

Lime.—Production of lime in 1956 continued to increase, gaining 1 percent in quantity and 4 percent in value. This rise in Pennsylvania was due largely to the increased demand for lime for use in the chemical and industrial industries and as refractory material. The sale of lime for agricultural and building purposes declined during the year. Of the 19 lime-producing counties in the State, Centre County continued to lead (producing one-half of the total value of lime for the State), with Chester, Lancaster, Lebanon, Montgomery, and York Counties having an output of over $1 million each. Of the total lime sold or used, 80 percent was in the form of quicklime and dead-burned dolomite and 20 percent in hydrated form.

Mica.—Output of mica increased in 1956 in both tonnage and value compared with 1955. The mica was mined and processed near Glenville and marketed as ground mica for use in manufacturing paints and rubber and as a coating on welding rods.

Nitrogen Compounds.—Two atmospheric nitrogen (anhydrous ammonia) plants were in production in Pennsylvania in 1956. Both plants used byproduct hydrogen from petroleum refining to produce synthetic anhydrous ammonia. The Atlantic Refining Co. operated a plant at Point Breeze (Philadelphia County), having a daily capacity of 100 tons of ammonia. The Sun Oil Co. began operations in February at its Marcus Hook plant. Daily production of ammonia was 300 tons per day. In mid-April the plant was closed by an explosion, and it was estimated that repairs would take 6 months.[4]

[4] Oil Paint and Drug Reporter, Anhydrous Ammonia Unit Explodes at Marcus Hook: Vol. 169, No. 17, Apr. 23, 1956, p. 5.

TABLE 7.—Lime sold by producers, 1947–51 (average) and 1952–56, by uses

Year	Agricultural		Building		Chemical and industrial		Refractory		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1947–51 (average)	134,697	$1,467,807	113,840	$1,553,032	813,460	$8,638,222	(1)	(1)	1,061,997	$11,659,061
1952	131,007	1,463,596	123,049	1,675,987	768,319	8,228,875	180,606	$2,473,755	1,202,981	13,842,213
1953	116,863	1,367,594	114,839	1,575,387	865,747	9,766,852	237,851	3,300,281	1,335,300	16,010,114
1954	129,146	1,537,849	120,661	1,697,895	816,044	9,753,519	15,732	217,047	1,081,583	13,206,310
1955	118,274	1,430,454	118,727	1,529,627	1,083,043	13,178,612	104,007	1,493,101	1,424,051	17,631,795
1956	229,348	3,156,710	110,344	1,456,088	1,103,738	13,669,337	(2)	(2)	1,443,430	18,282,135

[1] Refractory lime included with "Chemical and industrial."
[2] Refractory lime included with "Agricultural."

TABLE 8.—Lime sold or used by producers, 1955–56, by counties

County	1955		1956	
	Short tons	Value	Short tons	Value
Armstrong	788	$8,846	884	$10,185
Bedford	3,991	57,170	(1)	(1)
Blair			192	1,638
Dauphin			70,893	686,491
Franklin	2,513	21,987	2,305	20,745
Lebanon	244,111	2,749,585	165,418	1,737,841
Lycoming	800	6,400	1,400	11,200
Montgomery	74,079	1,150,083	71,782	1,077,063
Montour			60	378
Northumberland	550	4,276	485	4,000
Snyder	2,593	18,593	1,959	13,844
Somerset	1,563	9,378		
York	(1)	(1)	142,424	2,136,327
Undistributed [2]	1,093,063	13,605,477	985,628	12,582,423
Total	1,424,051	17,631,795	1,443,430	18,282,135

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties that must be concealed as indicated by footnote 1 and for the following counties: Butler, Centre, Chester, Fulton (1956), Juniata (1956), Lancaster, and Mifflin.

Pyrite.—A smaller quantity of pyrite was produced in 1956 by the Bethlehem Steel Co. at Cornwall (Lebanon County). The pyrite concentrate produced at the Lebanon Concentrator was shipped to Wilmington (Del.), where cobalt was recovered and pyrite sinter produced.

Pyrophyllite (Sericite Schist).—Output of sericite schist in 1956 increased in both tonnage and value. Output came from the open-pit mine operated by Summit Mining Corp. in Adams County. The sericite schist, after processing, was used as a carrier in insecticide chemicals, as a filler in asphaltic compounds, and in joint-filler cements. The company installed a new Hardinge disk mill, completing the construction on October 1, thus giving the company two mills.

Roofing Granules.—Two plants were operated by The Funkhouser Co. for the production of roofing granules. A plant at Delta (York County) produced roofing granules and flour from slate quarried nearby. A second plant at Charmian in Adams County, processed basalt into roofing granules and stone flour. A portion of the granules and flour produced at the Delta plant was exported.

Sand and Gravel.—The Pennsylvania sand and gravel industry overcame the decline that occurred in 1955 and showed a 6-percent increase in tonnage and 4-percent rise in value. Increased demand for sand and gravel as construction and building materials and use in State highways stimulated the growth of the industry in 1956.

Sand was sold for nine major uses, of which glass sand, paving sand, fire or furnace sand, and ground sand increased in the quantities sold or used. Molding-, building-, grinding-, and engine-sand sales decreased. Sand for use in blasting and filtering was not sold in 1956.

Gravel was used for four major applications, of which building, paving, and railroad ballast increased in tonnage.

In 1956 both sand and gravel was produced for use by Government agencies, while in 1955 only gravel was produced. Overall demand for sand and gravel was good in 1956, but wages and cost of supplies

increased, while value per ton decreased. In certain sections of the State, particularly the northeast, State highway construction of the turnpike resulted in increased demand, while in other areas demand was lower due to a slight decrease in the building activity. The average selling price for sand increased $0.13 per ton for fire sand to $0.90 for grinding sand and as high as $1.59 for ground sand. However, building sand decreased $0.11 per ton and paving sand $0.18. The average value for railroad gravel increased $0.09, while building gravel decreased $0.04 and paving gravel $0.14.

Commercial production of sand and gravel was reported in 41 counties in 1956. Bucks, Armstrong, and Lycoming Counties were the principal producing areas for commercial sand and gravel. Government-and-contractor production was reported in Lawrence, Monroe, and Philadelphia Counties. A total of 99 percent of the commercial production of sand and gravel was washed or otherwise processed before marketing. Of the commercial sand production, 24 percent was transported by railroads and 47 percent by trucks. About 11 percent of the gravel was transported by railroads and 47 percent by trucks.

Slate.—The slate industry in Pennsylvania in 1956 ranked first in the United States in total value of production and third in total tonnage, representing 24 percent of the Nation's tonnage and 36 percent of the total value. Production in Pennsylvania followed the national trend in 1956, decreasing 17 percent in tonnage and 5 percent in value. The market for electrical slate, roofing slate, and slate granules dropped substantially during 1956, and there was also a slight

TABLE 9.—Sand and gravel sold or used by producers, 1955–56, by uses

Use	1955		1956	
	Short tons	Value	Short tons	Value
COMMERCIAL OPERATIONS				
Sand:				
Molding and fire or furnace	521,044	$1,233,081	(1)	(1)
Building	3,823,809	5,094,580	3,817,152	$4,660,060
Paving	2,073,476	2,850,744	2,245,280	2,990,176
Engine	127,148	302,837	(1)	(1)
Filter	420	1,260		
Other [2]	1,001,339	3,111,164	1,827,094	5,628,849
Total sand	7,547,236	12,593,666	7,889,526	13,279,085
Gravel:				
Building	3,659,166	5,093,197	4,039,259	5,471,500
Paving	1,823,028	2,529,653	1,934,265	2,413,949
Railroad ballast	79,988	51,981	103,163	76,579
Other	131,663	200,942	57,605	35,228
Total gravel	5,693,845	7,875,773	6,134,292	7,997,256
Total sand and gravel	13,241,081	20,469,439	14,023,818	21,276,341
GOVERNMENT-AND-CONTRACTOR OPERATIONS				
Sand: Paving			9,300	16,740
Gravel: Paving	71,890	42,408	13,950	27,900
Total sand and gravel	71,890	42,408	23,250	44,640
Grand total	13,312,971	20,511,847	14,047,068	21,320,981

[1] Included with "Other" to avoid disclosing individual company confidential data.
[2] Includes glass, grinding and polishing, blast, other uses and ground sand.

TABLE 10.—Sand and gravel sold or used by producers, 1955–56, by counties

County	1955		1956	
	Short tons	Value	Short tons	Value
Armstrong	(1)	(1)	1,339,083	$2,436,281
Beaver	472,848	$699,133	437,872	453,279
Bedford	9,644	22,953	10,770	25,525
Bucks	5,173,952	7,529,929	4,585,135	5,705,930
Butler	104,987	138,982	(1)	(1)
Cambria			3,500	10,500
Carbon	267,971	392,907	269,593	389,859
Crawford	117,249	126,768	134,535	160,505
Cumberland	(1)	(1)	92,195	136,188
Dauphin	97,192	95,032	44,577	42,374
Elk	40,235	24,338		
Erie	172,070	208,769	130,312	168,459
Fayette	260,000	656,000	190,457	446,804
Forest	61,035	79,805	103,050	150,977
Franklin	153,955	224,390	143,198	209,542
Luzerne	362,561	428,530	468,763	554,573
Lycoming	833,023	608,260	847,649	630,090
Mercer	223,973	360,864	267,217	381,092
Monroe	38,512	54,433	205,942	330,338
Montgomery	10,000	25,060	11,000	26,050
Northampton	281,173	336,157	(1)	(1)
Northumberland	(1)	(1)	8,014	9,900
Philadelphia	599,200	339,747	625,325	429,412
Schuylkill	165,723	382,538	215,768	545,487
Somerset	2,292	6,694	(1)	(1)
Wayne	(1)	(1)	40,142	60,059
York	65,561	104,689	(1)	(1)
Undistributed [2]	3,799,815	7,665,869	3,872,971	8,017,757
Total	13,312,971	20,511,847	14,047,068	21,320,981

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties that must be concealed as indicated by footnote 1 and for the following counties: Allegheny, Berks, Blair, Bradford, Chester (1956), Clearfield, Columbia, Huntingdon, Lancaster, Lawrence, McKean, Mifflin, Venango, Warren, Westmoreland (1955), and Wyoming.

decrease in the use of slate as flagging stone. Demand for structural and sanitary slate, blackboard slate, school slates, and slate flour increased sharply, with a slight increase in the use of slate for billiard tables. No slate was reported sold for making grave vaults and covers in 1956.

Employees of the Capital Slate Co., Inc. (East Bangor), were on strike from June to October. No other strikes were reported; however, various companies reported increased wages. Quarries were operated in 1956 in Lehigh, Northampton, and York Counties; Northampton County supplied 79 percent of the value of production. Sixteen operators were active in producing slate in 1956—14 in Northampton County and 1 each in Lehigh and York Counties.

Stone.—Production of stone in Pennsylvania in 1956 increased 1 percent in tonnage and 7 percent in value compared with 1955. Sandstone, granite, basalt, limestone, and miscellaneous stone were produced in 45 of the 67 counties; of the total value, sandstone represented 10, basalt 8, and limestone 81 percent.

Sandstone was marketed as both dimension and crushed stone, showing a combined total increase of 26 percent in tonnage and 71 percent in value compared with 1955. Higher material, wage, and labor costs, contributed to the large increase in selling price. About 64 percent more dimension sandstone was produced and marketed in Pennsylvania at a 37-percent increase in selling price. Dimension sandstone was prepared as rough construction, rubble, rough archi-

tectural, dressed, and curbing and flagging stone. All use categories except dressed stone increased in both tonnage and value over 1955. Increased use of concrete and concrete blocks for outside facings had some effect on the demand for dressed stone.

Crushed sandstone was prepared and sold as riprap, concrete aggregate, roadstone, railroad ballast, and refractory material and for other uses. Crushed sandstone for use as concrete aggregate, road material, and refractory material was the only crushed stone for which increases were reported in 1956. Demand for ganister rock for making silica brick and furnace linings was down during July and August because of the steel strike but quickly regained its usual status. In certain areas slag has become a material competitive to sandstone used as concrete aggregate and roadstone.

As in 1955, only dimension granite was sold from the granite processed in Pennsylvania. In 1956, it decreased 20 percent in tonnage and increased 15 percent in value. The granite was utilized as building stone and memorial stone and for granite surface plates. One quarry each in Bucks, Delaware, and Montgomery Counties was active in 1956.

Basalt decreased in tonnage in 1956 compared with 1955. Both dimension and crushed basalt was marketed in 1956. Crushed basalt decreased 5 percent in tonnage but increased 10 percent in value. Demand was greater in 1956 than in 1955 for all use categories except for road material and railroad ballast. The increased value was attributed principally to the higher cost of material and labor, thus requiring a higher selling price. Dimension basalt was marketed as stone for rough construction, and the crushed stone was marketed as riprap, concrete aggregate or roadstone, and railroad ballast and for other miscellaneous uses, principally roofing granules. Basalt was produced from quarries in Adams, Berks, Bucks, Chester, Delaware, and Montgomery Counties, with Delaware County being the principal area for basalt production.

The output of dimension limestone in 1956 decreased 41 percent in production and 45 percent in value, compared with 1955. The stone was produced in Bucks, Chester, and Lancaster Counties and used as rubble and rough construction stone.

Crushed limestone increased 0.5 percent in tonnage (223,078 short tons) and 3 percent ($1,507,053 value) in value. The limestone was used as concrete aggregate, fluxing agent, riprap, and railroad ballast and for agricultural purposes and miscellaneous uses. Limestone as riprap, concrete aggregate, and soil conditioner increased in tonnage and value. Despite the work stoppage in the steel industry, use of limestone as flux decreased only 6 percent in tonnage and 2 percent in value. Overall, increases in wages and in the resultant selling prices contributed to the increased value of production.

Miscellaneous stone was produced from quarries in Pennsylvania and processed and marketed as both dimension and crushed stone. Output of the dimension-stone industry decreased in both tonnage and value; the decrease in rough construction material caused a decrease in tonnage. The decreased value of curbing and flagging stone contributed substantially to the drop in total value. Both tonnage and value for crushed miscellaneous stone increased more

TABLE 11.—Stone sold or used by producers, 1955–56, by uses

Use	1955		1956	
	Short tons	Value	Short tons	Value
Dimension stone:				
Building stone	224,232	$912,635	172,413	$1,114,847
Monumental stone	378	55,325	168	24,115
Curbing and flagging	13,711	292,859	[1]	[1]
Total dimension stone	238,321	1,260,819	172,581	1,138,962
Crushed and broken stone:				
Riprap	85,752	144,754	262,089	382,834
Concrete, road stone, and railroad ballast	15,575,172	23,314,077	17,502,458	26,668,680
Furnace flux (limestone)	9,950,775	16,714,426	9,365,869	16,314,675
Refractory	334,908	2,019,891	367,700	4,122,215
Agricultural	712,029	2,300,887	759,365	2,610,549
Other uses	17,540,666	[2] 23,163,257	16,482,925	22,592,805
Total crushed and broken stone	44,199,302	[2] 67,657,292	44,740,406	72,691,758
Grand total	44,437,623	[2] 68,918,111	[3] 44,912,987	[3] 73,830,720

[1] Included with "Building stone" to avoid disclosing individual company confidential data.
[2] Revised figure.
[3] Excludes dimension basalt.

TABLE 12.—Stone sold or used, 1955–56, by counties

County	1955		1956	
	Sbort tons	Value	Short tons	Value
Allegbeny	[1]	[1]	9,280	$31,442
Bedford	23,865	$62,390	[1]	[1]
Berks	2,414,747	3,146,268	2,192,384	2,832,145
Blair	536,805	1,068,855	[1]	[1]
Bucks	697,483	1,269,313	745,468	1,370,960
Butler	2,452,797	4,443,739	[1]	[1]
Cambria	5,000	13,750		
Centre	2,223,352	3,786,956	2,148,594	3,641,169
Chester	1,389,214	2,171,530	2,059,717	3,139,266
Clinton	151,958	213,492	158,134	236,808
Cumberland	531,810	914,671	594,146	1,013,487
Dauphin	1,342,482	2,149,426	1,351,944	2,298,394
Fayette	324,181	769,751	[1]	[1]
Franklin	380,997	605,035	439,426	702,703
Fulton	65,428	85,924	100,312	152,847
Huntingdon	349,045	1,304,607	[1]	[1]
Indiana	2,200	9,900	1,810	8,145
Juniata	89,616	286,502	[1]	[1]
Lancaster	1,717,028	2,747,208	1,827,280	3,005,250
Lawrence	3,273,959	5,338,034	3,287,899	5,561,574
Lebanon	2,445,651	3,859,376	[1]	[1]
Lebigh	2,760,563	3,014,849	2,362,481	2,384,814
Lycoming	315,936	558,830	357,682	583,692
Mercer	[1]	[1]	500	2,500
Montgomery	5,168,336	8,219,101	4,689,348	7,770,243
Montour	393,350	536,821	[1]	[1]
Northbampton	6,880,654	6,891,767	6,066,925	5,540,291
Perry	17,917	32,447	46,943	94,353
Potter	7,438	171,761	[1]	[1]
Schuylkill	11,376	17,064	[1]	[1]
Snyder	79,703	131,866	[1]	[1]
Susquehanna	3,414	59,238	[1]	[1]
Union	181,900	308,650	[1]	[1]
Washington	4,884	34,150		
Wayne	116,515	186,424	131,592	239,698
York	2,348,211	4,159,418	2,363,575	4,016,227
Undistributed [2]	5,729,808	[3] 10,348,998	13,977,547	29,204,712
Total	44,437,623	[3] 68,918,111	[4] 44,912,987	[4] 73,830,720

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties as indicated by footnote 1 and the following counties: Adams, Armstrong, Carbon (1956), Delaware, Luzerne, Mifflin, Monroe, Northumberland, Philadelphia (1955), Somerset, Westmoreland, and Wyoming (1956).
[3] Revised figure.
[4] Incomplete total; excludes certain stones to avoid disclosing individual company confidential data.

than 100 percent, principally because of the increased demand for this material as concrete aggregate and road material. Producers of miscellaneous stone were active in Bucks, Lycoming, Montgomery, Potter, and Westmoreland Counties. Compared with the 1955 production locations, miscellaneous stone was produced also in Fayette County but not in Lycoming or Westmoreland Counties.

Sulfur.—Output of byproduct sulfur increased both in tonnage and value in 1956 with Pennsylvania ranking fifth in the nation. The elemental sulfur was recovered at the Sinclair Refining Co. Marcus Hook refinery as brimstone.

Tripoli.—Pennsylvania was 1 of the 3 States producing tripoli in 1956 ranking third, with a production of 1,000 tons. The output of rottenstone decreased slightly whereas value increased 23 percent. The ground material was used as an abrasive in such compounds as buffing compounds, metal polish, and cleaning and scouring soaps and as a filler.

METALS

Iron Ore.—Iron-ore production in Pennsylvania in 1956 was retarded by a steel strike from July 1 to August 5. All the iron ore was produced at the underground Cornwall mine and shipped by rail to the Lebanon concentrator. Magnetite, copper pyrite, and iron pyrite in the ore were recovered at the Lebanon beneficiation plant, where iron concentrate, copper concentrate, and pyrite concentrate were produced. The copper concentrate was transferred primarily to a smelter at Laurel Hill, N. Y., for recovering copper, gold, and silver. The pyrite concentrate was processed further to recover cobalt and pyrite sinter. Underground development at the Cornwall mine in 1956 consisted of extending the incline shaft 2,100 feet, advancing 5,000 feet of drift and 1,500 feet of tunnel, and diamond drilling 52,500 feet. All of the iron ore was used for pig iron and steel.

Construction was begun by Dravo Corp. on the Nation's largest sintering plant at Saxonburg, Pa. The multimillion-dollar facility was being built for United States Steel Corp. The initial capacity for the sintering plant was to exceed 15,000 tons of iron ore sintered a day. The Saxonburg plant just north of Pittsburgh will process iron ore shipped from the Mesabi range and from the United States Steel Corp. new mines in Venezuela. Each of the 3 sintering machines will be 8 feet 3 inches wide, 200 feet long, and about 50 feet high.[5]

The first shipment of nickel was made from National Lead Co. Crum Lynne (Pa.) refinery. This refinery was operated by National Lead Co. and produced metallic nickel under a government contract. Nickel oxide sinter from the Government-owned facility in Nicaro, Cuba, was used as a raw material. The nickel was sold for the production of stainless and other nickel bearing steels.[6]

Pig Iron and Ferrous Scrap.—Production of pig iron in Pennsylvania in 1956 totaled 20,450,000 net tons. Despite a decrease of 150,155 short tons of pig iron produced in 1956, consumption of scrap in making pig iron increased 458,482 short tons. In all, 38,207,026 net

[5] Blast Furnace and Steel Plant, Construction of Sintering Plants Started: Vol. 14, No. 8, August 1956, p. 948.
[6] Oil Paint and Drug Reporter, National Lead Ships First Nickel from Refinery at Crum Lynne, Pa.: Vol. 170, No. 10, Sept. 3, 1956, p. 5.

tons of metalliferous materials, 17,027,748 tons of coke, and 8,006,628 tons of flux were consumed in producing pig iron. Metalliferous materials consumed per ton of pig iron produced in 1956 totaled 1.853—slightly less than in 1955.

Consumption of pig iron and ferrous scrap in Pennsylvania in 1956 increased less than 1 percent (308,327 short tons) compared with 1955. Open-hearth furnaces continued to be the leading consumer of both pig iron and ferrous scrap, consuming 87 percent of the total pig iron used and 76 percent of the total scrap used.

TABLE 13.—Consumption of pig iron and ferrous scrap in 1955–56, by type of furnace, in short tons

Type of furnace and raw material	1955	1956
Open-hearth furnaces:		
Pig iron	18,071,822	17,883,714
Scrap	13,929,937	14,166,691
Total	32,001,759	32,050,405
Bessemer converters:		
Pig iron	671,189	716,047
Scrap	125,837	79,586
Total	797,026	795,633
Electric steel furnaces:		
Pig iron	20,503	26,715
Scrap	1,752,251	1,897,991
Total	1,772,754	1,924,706
Cupola furnaces:		
Pig iron	328,134	346,810
Scrap	754,079	767,346
Total	1,082,213	1,114,156
Air furnaces:		
Pig iron	52,402	54,812
Air furnaces—Continued		
Scrap	151,105	163,476
Total	203,507	218,288
Blast furnaces:		
Pig iron		
Scrap	1,450,662	1,532,895
Total	1,450,662	1,532,895
Ferroalloy furnaces:		
Pig iron		
Scrap	276	334
Total	276	334
Miscellaneous uses:		
Pig iron	[1] 1,456,223	1,422,020
Scrap	[2] 85,242	[2] 99,552
Total	1,541,465	1,521,572
Total Pennsylvania:		
Pig iron	20,600,273	20,450,118
Scrap	18,249,389	18,707,871
Total	38,849,662	39,157,989

[1] Includes direct castings and small quantity used in crucible furnaces.
[2] Includes small quantity used in crucible furnaces.

REVIEW BY COUNTIES

Adams.—The Hanover quarry operated by Bethlehem Limestone Co. west of Hanover in Adams County yielded limestone, which was crushed at the local plant for use as blast-furnace flux, road material, railroad ballast, agricultural purposes, and stone sand and for cement manufacture. Quantities of the crushed stone were sold under contract to nearby Government agencies. Basalt was produced by The Funkhouser Co. from an open quarry and underground mine east of Charmian in Adams County. Crushed basalt was sold for use as roofing granules and stone flour.

Sericite schist was produced by Summit Mining Corp. from an open pit near Bendersville, ground at its local mill, and sold for use as filler in asphalt products, insecticides, and joint cement.

Miscellaneous clay, used in manufacturing heavy clay products, was recovered from open-pit mines by Alwine Brick Co., New Oxford, and Gettysburg Drain Tile Works, Gettysburg.

TABLE 14.—Value of mineral production in Pennsylvania, 1955–56, by counties [1] [2] [3]

County	1955	1956	Minerals produced in 1956 in order of value
Adams	(4)	(4)	Stone, sericite schist, clays.
Allegheny	$58, 081, 078	$64, 536, 756	Coal, cement, clays, sand and gravel, stone.
Armstrong	10, 197, 169	15, 915, 421	Coal, clays, sand and gravel, stone, lime.
Beaver	4, 225, 167	4, 687, 410	Clays, coal, sand and gravel.
Bedford	551, 195	2, 083, 765	Stone, coal, lime, sand and gravel.
Berks	8, 913, 688	9, 671, 278	Cement, stone, clays, sand and gravel, oystershell.
Blair	2, 143, 001	2, 453, 437	Stone, coal, clays, sand and gravel, lime.
Bradford	(4)	(4)	Sand and gravel, coal.
Bucks	8, 821, 242	7, 120, 640	Sand and gravel, stone, clays.
Butler	15, 737, 558	16, 751, 886	Coal, cement, stone, lime, sand and gravel, clays.
Cambria	63, 592, 999	68, 839, 370	Coal, clays, sand and gravel, crude iron oxide pigments.
Cameron	335, 560	(4)	Coal.
Carbon	14, 576, 629	15, 866, 478	Coal, stone, sand and gravel, clays.
Centre	14, 266, 587	16, 623, 942	Lime, coal, stone, clays.
Chester	3, 439, 493	4, 635, 706	Stone, lime, sand and gravel, clays.
Clarion	8, 578, 848	14, 236, 105	Coal, clays.
Clearfield	(4)	(4)	Coal, clays, sand and gravel.
Clinton	2, 635, 528	2, 745, 587	Coal, stone, clays.
Columbia	6, 648, 621	6, 186, 419	Coal, sand and gravel, clays.
Crawford	126, 768	160, 505	Sand and gravel.
Cumberland	(4)	1, 149, 675	Stone, sand and gravel.
Dauphin	3, 038, 855	4, 641, 527	Stone, coal, clays, sand and gravel, lime.
Delaware	(4)	(4)	Stone, sulfur.
Elk	(4)	(4)	Coal, clays.
Erie	(4)	(4)	Sand and gravel, peat.
Fayette	41, 341, 340	35, 322, 678	Coal, clays, stone, sand and gravel.
Forest	79, 805	150, 977	Sand and gravel.
Franklin	844, 648	932, 990	Stone, sand and gravel, lime.
Fulton	(4)	399, 014	Coal, stone, lime.
Greene	65, 628, 367	68, 823, 643	Coal, clays.
Huntingdon	4, 315, 318	5, 848, 287	Sand and gravel, stone, coal, clays.
Indiana	28, 480, 723	36, 557, 072	Coal, clays, stone.
Jefferson	(4)	(4)	Coal, clays.
Juniata	286, 502	554, 045	Stone, lime.
Lackawanna	22, 017, 503	28, 612, 975	Coal.
Lancaster	5, 323, 416	6, 131, 612	Stone, lime, coal, sand and gravel, clays.
Lawrence	17, 474, 987	18, 978, 581	Cement, stone, coal, clays, sand and gravel.
Lebanon	20, 917, 678	20, 130, 548	Iron ore, copper, stone, lime, cobalt, pyrite, gold, coal, silver.
Lehigh	26, 604, 947	(4)	Cement, stone, slate, oystershell.
Luzerne	87, 818, 001	91, 793, 125	Coal, stone, sand and gravel, peat, clays.
Lycoming	[5] 1, 411, 770	1, 493, 880	Sand and gravel, stone, coal, lime, tripoli, clays.
McKean	599, 095	820, 155	Clays, coal, sand and gravel.
Mercer	2, 859, 077	3, 015, 701	Coal, sand and gravel, peat, stone.
Mifflin	(4)	(4)	Sand and gravel, stone, lime.
Monroe	(4)	(4)	Sand and gravel, stone.
Montgomery	14, 501, 384	(4)	Stone, cement, lime, clays, sand and gravel.
Montour	536, 821	(4)	Stone, lime.
Northampton	73, 568, 907	83, 082, 046	Cement, slate, stone, sand and gravel, coal.
Northumberland	21, 418, 663	26, 593, 629	Coal, clays, stone, sand and gravel, lime.
Perry	32, 447	94, 353	Stone.
Philadelphia	368, 747	429, 412	Sand and gravel.
Potter	171, 761	(4)	Stone.
Schuylkill	53, 565, 714	69, 799, 731	Coal, sand and gravel, stone, clays.
Snyder	262, 133	388, 141	Clays, stone, coal, lime.
Somerset	15, 326, 200	22, 474, 172	Coal, clays, stone, sand and gravel.
Sullivan	63, 426	57, 042	Coal.
Susquehanna	59, 238	(4)	Stone.
Tioga	421, 032	486, 275	Coal.
Union	308, 650	(4)	Stone.
Venango	(4)	(4)	Coal, sand and gravel.
Warren	(4)	(4)	Sand and gravel.
Washington	94, 690, 663	95, 669, 087	Coal, clays.
Wayne	(3)	299, 757	Stone, sand and gravel.
Westmoreland	20, 377, 543	20, 937, 309	Coal, stone, clays.
Wyoming	(4)	(4)	Sand and gravel, stone.
York	11, 201, 555	12, 527, 337	Cement, stone, lime, slate, clays, sand and gravel, mica.
Undistributed	[5] 111, 121, 721	178, 157, 713	
Total	[5] 969, 910, 000	1, 088, 867, 000	

[1] Pike County is not listed, because no production was reported.
[2] Excludes value of production for LP-gases, natural gas, natural gasoline, and petroleum by counties, but value is included with "Undistributed."
[3] Excludes value of clays and stone used in the manufacture of lime and cement.
[4] Figure withheld to avoid disclosing individual company confidential data; included with "Undistributed."
[5] Revised figure.

Allegheny.—The major portion of bituminous coal mined in Allegheny County in 1956 was from underground mines, with smaller quantities from strip and auger mines. Leading producers were: Allegheny-Pittsburgh Coal Co., William Aloe Coal Co., Butler Consolidated Coal Co., Campbell Coal Co., Duquesne Light Co., Greensburg-Connellsville Co., Harmar Coal Co., National Mines Corp., Pittsburgh Coal Co., and Republic Steel Corp.

Universal Atlas Cement Co., a subsidiary of United States Steel Corp., operated its cement plant at Universal, producing air-entrained and non-air-entrained Types I–II, portland-pozzolan, waterproof-portland, and mortar cements by the wet process. Pittsburgh Coke & Chemical Co., Green Bag Cement Division, produced cement from its plant at Neville Island. Portland-pozzolan and waterproof-portland cements were manufactured by the wet process.

Production of miscellaneous clay was utilized for manufacturing heavy clay products by Bridgeville Brick Co., Bridgeville; Van Ormer Brick Co., Inc., Pitcairn; M. Lanz Brick & Tile Co., Pittsburgh; Milliken Brick Co., Inc., Wilkinsburg; and Allegheny Brick Co., Creighton.

Sand & Gravel, Inc., operator of a dredge on the Allegheny River near Pittsburgh, recovered and processed building and paving sand and gravel. James H. McCrady, Jr. (Harmarville), produced and processed molding sand and a quantity of unwashed road sand. Keystone Sand & Gravel Co. (Pittsburgh) and Frank Bryan, Inc. (McKees Rocks), produced washed sand usable as building sand and sold the material to the United States Army Corps of Engineers (Pittsburgh) for use in repairing dams and locks.

Malli Mines (Jefferson Borough) produced miscellaneous irregular dimension sandstone for use in construction work, and Francis Matesia (Bridgeville) produced dimension sandstone for use as rubble.

Panacalite Perlite Co. (Pittsburgh) processed expanded perlite for use as plaster aggregate and Perlite Manufacturing Co. (Carnegie) for use as plaster and concrete aggregate and for miscellaneous industrial uses. Both companies purchased crude perlite from mines in Western United States.

Armstrong.—Production of bituminous coal reported in Armstrong County was mined from underground, strip, and auger mines. Leading producers were: Allegheny River Mining Co., B. & V. Coal Co., J. Russell Cravener Coal Co., Freebrook Corp., Hawk Bros. Contracting Co., Leechburgh Mining Co., M. & E. Coal Co., Inc., Powell Coal Co., Taylor Bros., and West Freedom Mining Co.

In terms of value, Armstrong County was the second leading clay-producing county in the State in 1956. Five operators of underground mines produced plastic fire clay used primarily for manufacturing refractories and heavy clay products and a smaller quantity of mortar. Producers were Kittanning Refractories, Inc., Continental Clay Products Co., and Haws Refractories Co., all at Kittanning; Kittanning Brick Co., Adrian; and Harbison-Walker Refractories Co., Pittsburgh. Freeport Brick Co. (Freeport) produced flint fire clay from an underground mine for use in manufacturing refractory firebrick and block. Worthington Ceramics Co. (Worthington), produced plastic fire clay from an open pit, which was sold for use in manufacturing heavy clay products, and Graff-Kittanning

Clay Products Co. (Worthington) produced plastic fire clay from an open pit for use at the local company plant for making sewer pipe and wall coping.

Sand and gravel recovered from a dredging operation along the Allegheny River near Ford City by J. K. Davison & Bro. was sold for use as construction and paving material. Glacial Sand & Gravel Co. (Cowansville) produced and marketed prepared building and paving sand and gravel and gravel for use as railroad ballast. Allegheny Sand & Loam Co. (Leechburg) produced sand and prepared it for use as fire or furnace sand, and Lee Don, Inc., Manorville Sand Division (Manorville), produced building sand and gravel and paving sand.

Michigan Limestone Division, United States Steel Corp., operated the Kaylor underground mine south of East Brady in Armstrong County, producing limestone for use as blast-furnace flux and road material, for agricultural purposes, and in manufacturing cement. A quantity of stone was sold to Government agencies as highway material. C. D. McCanna Plant crushed limestone produced from an underground mine at Kittanning, for use in making lime.

Hydrated lime, produced and marketed for agricultural purposes, was reported by C. D. McCanna Lime Plant, Walter Hershberger, and Robert E. Toy, all near Kittanning.

Beaver.—Beaver County ranked first in the State in 1956 in the production of clays. The leading producers of 13 reporting companies were: McLain Fire Brick Co., Division of H. K. Porter Co., Inc., Beaver; Eastvale Clay Products Co., Beaver Falls; Standard Clay Manufacturing Co., and Colonial Clay Products Co., both at Fallston; Ralph A. Veon, Inc., Darlington and New Galilee; Pen-Hio Clay Co., Cannelton; McQuiston Coal Co., Darlington; Negley Fire Clay Co. and New Castle Refractories Co., both at New Galilee; and Davis Coal Co., Beaver County, west of Negley, Ohio. Fire clay of the flint and burley type and miscellaneous clay were sold or used mainly for manufacturing heavy clay products, refractory firebrick and block, refractories for foundries, and use at steelworks. A quantity of the clay was used for the manufacture of art pottery, flower pots, glaze slip, and in pouring channels.

Ten leading producers of bituminous coal in Beaver County were: Oscar Brown, Colonial Gas Coal Co., Courtney Coal Co., Dow-Lin Coal Co., C. J. Lundy Mining Co., Negley Fire Clay Co., North Sewickley Coal Co., Sunnyside Coal Mining Co., Tasa Coal Co., and R. A. Veon. Underground, strip, and auger mines were operated in the county.

Beaver Sand Co. (Beaver) produced washed sand and gravel for construction use. Shippingport Sand & Gravel Co. operated a dredge and fixed plant near Shippingport, producing prepared sand and gravel for building and paving purposes.

Bedford.—New Enterprise Stone & Lime Co., Inc., operated a limestone quarry and crushed the stone at the Aschom plant (Everett) for use as road material. Quantities of crushed limestone also were sold to Government agencies as road material. Ganister rock sold or used for manufacturing silica brick and furnace or converter lining was quarried by Leap Ganister Rock Co. (Madley).

Leading producers of bituminous coal in Bedford County were: Ark Coal Co., Bunker Hill Coal Co., Fry Coal & Stone Co., Ellsworth Douglas, Helen Coal Co., Hickory Hill Coal Co., Kenneth G. Richards, Tenley Coal Co., Top Coal Co., and Ralph Wills. Coal was mined from underground and strip operations.

Quicklime was produced and sold for agricultural purposes by J. Mason Kerr, operator of the Gravel Pit Kilns near Hyndman. New Enterprise Stone & Lime Co., Inc., produced hydrated lime as agricultural, chemical, and industrial lime at it Aschom plant at Everett.

Feight Bros. (Everett) produced sand and washed it at a local preparation plant for use as building material.

Berks.—Allentown Portland Cement Co. operated quarries at Evansville and Oley, producing crushed limestone and cement rock utilized at the Evansville No. 1 plant for manufacturing portland cement (Types I–II, Type III, air-entrained, and non-air-entrained) and mortar cement.

Eastern Lime Corp. reported output of crushed limestone from the Hinterleiter quarry and crusher at Kutztown for road material and agricultural purposes. This company also began developing a new stone quarry and plant at Oley, to begin production in 1957. Crushed limestone, usable as road material and railroad ballast, was produced from a quarry by Berks Products Corp. (Reading). Some of the stone was sold to local Government agencies. E. J. Breneman, Inc., operated a quarry and plant at Sinking Spring, producing crushed limestone for road material, and sold a major portion under contract to local Government agencies. The John T. Dyer Quarry Co. operated 3 quarries—1 each at Monocacy, Birdsboro, and Robeson—producing crushed basalt for use as road material, railroad ballast, and riprap. Stowe Trap Rock Co. (Douglassville) produced crushed basalt for use as road material and railroad ballast.

Miscellaneous clay was produced by Glen-Gery Shale Brick Corp. from open-pit mines at Wyomissing and Shoemakersville, for use in manufacturing heavy clay products.

John H. Gring (Sinking Spring) produced building sand and gravel and paving gravel for use by local builders. Building sand and gravel was produced and sold by Schildt Bros. (Temple).

Reading Poultry Feed Co. (Reading) crushed oystershell for use as mineral food and poultry grit.

Blair.—Limestone was quarried, crushed, and sold primarily as road material by Chimney Rocks Lime & Stone Co., Hollidaysburg; Eldorado Stone Co., Altoona; and New Enterprise Stone & Lime Co., Inc., Roaring Spring and Hollidaysburg. Several producers marketed the limestone to local Government agencies for use as road material. Sproul Lime & Stone Co. (Claysburg) sold pulverized agricultural limestone. General Refractories Co. (Claysburg) and J. L. Hartman Co., operator of the Sara Furnace quarry (Sproul), produced and ground quartzite for making silica brick. Basalt Trap Rock Co. produced quartzite from its quarry at Williamsburg for use as railroad ballast, road material, and riprap.

Producers of bituminous coal in Blair County in 1956 were: Burkhart Coal Co., Cavalier Coal Co., Margaret Heston, Lawrence Sherbine, and Stone Bridge Coal Co. Both underground and strip mines were operated.

Kaolin, produced by Grannas Bros. from the No. 1 open-pit mine near Williamsburg, was sold for use in manufacturing fire brick and block. Miscellaneous clay was produced by Blair Clay Products, Inc. (Altoona) and used for making building brick. Woodbury Clay Co. (Williamsburg) produced and sold plastic fire clay for making mortar, and Harbison-Walker Refractories Co. (Orcminea) produced plastic fire clay for use in manufacturing firebrick and block.

General Refractories Co. (Frankstown) reported producing gravel as building material. Frankstown Sand Supply and George G. Trude (both at Frankstown) produced and sold washed sand for building purposes.

A quantity of hydrated lime for agricultural use was manufactured and sold by Chimney Rocks Lime & Stone Co. (Hollidaysburg).

Bradford.—Karl D. Shiner (Towanda, Wysox Township), the only producer of sand and gravel in Bradford County, reported output of sand and gravel washed and screened at a local processing plant for use as building and paving material. A small quantity of unwashed bank-run gravel was sold for miscellaneous uses.

Bituminous coal was mined from a strip mine by Paul Percival, the only producer of coal in Bradford County.

Bucks.—Bucks County continued to lead in sand and gravel production in the State in 1956 but showed a slight decrease in production and value compared with 1955. Eight companies reported production of sand and gravel, output of which was sold primarily for structural and paving material. Producers were: Amico Sand & Gravel Co., Fallsington; Durnan & Good and Frank Casilio & Sons, Upper Black Eddy; Warner Co., Van Sciver and Dredge Franklin plants, Silvi Sand & Gravel Co., and the Brennan Sand Co., Tullytown; Riegelsville Sand & Gravel Co., Riegelsville; and A. L. Lewis, New Hope.

Bituminous Service Co. (Buckingham) and New Hope Crushed Stone Lime Co. (New Hope), recovered limestone from quarries and crushed the stone at local plants for road material. New Hope Crushed Stone Lime Co. sold some of the material to Government agencies for local Government projects. Edward Karpinski produced dimension limestone for use as rubble, from the Karpinski quarry at Janney Station. Production of basalt from the Rock Hill quarry at Quakertown by The General Crushed Stone Co. was crushed for use as road material and railroad ballast. A quantity of road material was sold to various Government agencies. David D. Derstine, east of Telford in Bucks County, quarried and crushed basalt for road material.

Coopersburg Granite Co. produced dressed dimension granite from a quarry near Coopersburg, marketed under the trade name "American Premier Blue-Black Granite," for use as granite surface plates. Miscellaneous dimension stone as rough and dressed building stone, and crushed stone as road material was recovered from the Edison quarry, Edison, and crushed at the local plant by C. Bucciarelli & Sons. A. & L. Kauffman operated the Rushland quarry, Rushland; George Wiley, Wiley's quarry (blue stone), Point Pleasant; and Samuel M. Yoder Estate operated the Blooming Glen Stone Crushing Works and quarry at Blooming Glen. All produced crushed miscellaneous stone for road material.

Quakertown Brick & Tile Co., Inc. (Quakertown), reported output of miscellaneous clay for use in the manufacture of standard size building brick.

Hyzer & Lewellen (Southampton) imported crude vermiculite from Africa and processed the material at its exfoliating plant for use in manufacturing packaging acids, plaster, house insulation, and concrete.

Butler.—Production of bituminous coal in Butler County was mined by underground, strip, and auger methods. Leading producers were: Allison Engineering Co., Chutz Bros., Grove City Construction Co., Grubbs Construction Co., Kerry Coal Co., Miller & McKnight Coal Co., Sunbeam Coal Corp., Tri County Fuel Co., West Freedom Mining Co., and Winters & Evans.

Penn-Dixie Cement Corp. produced limestone from its underground mine at West Winfield and utilized the crushed stone at the No. 9 plant for the manufacture of cement. Portland cement of the non-air-entrained Types I–II and III, and masonry cement were produced and marketed by this company.

Grove City Limestone Co. recovered limestone from a quarry and crushed the stone at the local Branchton plant for road material and agricultural purposes. Michigan Limestone Division, United States Steel Corp., mined limestone from the Annandale underground mine and crushed the stone at Boyers for use as blast-furnace flux, road material, and railroad ballast and in manufacturing cement. Both companies sold road material to Government agencies.

Hydrated lime manufactured and sold for agricultural use, sewage treatment, and water purification and quicklime for use in open-hearth and electric furnaces, were produced by Mercer Lime & Stone Co., Inc., near Branchton.

Production of building sand and gravel, from a pit and fixed plant at Slippery Rock, was reported by H. W. Cooper. Harold M. Martsolf reported no production of sand and gravel in 1956, as he was erecting a new plant near Portersville (Muddy Creek Township).

D. B. Boosel operated an open-pit mine near Slippery Rock, producing plastic fire clay sold for use in manufacturing refractories; and Scott Borland mined miscellaneous clay from an open-pit mine at Mars, used for making heavy clay products.

Cambria.—The major portion of bituminous coal mined in Cambria County in 1956 was from underground mines, with smaller quantities from strip and auger mines. Some leading producers were: Barnes & Tucker Co., The Berwind White Coal Mining Co., Bethlehem Limestone Co., Bethlehem Steel Co., Bird Coal Co., Eastern Gas & Fuel Association (Coal Division), Johnstown Coal & Coke Co., Pennsylvania Coal & Coke (Penn Texas Division), Rich Hill Coal Mining Co., Sterling Coal Co., and Vinton Coal & Coke Co.

Triangle Clay Products Co. (Johnstown) produced miscellaneous clay from an open pit, and Patton Clay Manufacturing Co. (Patton) produced fire clay from an underground mine. Both companies used the clay for manufacturing heavy clay products. Hiram Swank's Sons, Inc., operated the Swank No. 24 underground mine at South Fork, producing flint fire clay used for manufacturing refractory sleeves, nozzles, and stoppers. The Blandburg Frick No. 2 underground mine near Dean, operated by Harbison-Walker Refractories

Co., yielded plastic fire clay used for manufacturing glass refractories.

Nicosia Stone Quarry produced a quantity of building sand and gravel from a pit and fixed plant at Johnstown.

Lanzendorfer Trucking Co. produced and marketed crude iron oxide pigments of the yellow sulfur mud variety from its No. 31 mine near Twin Rocks for use as paint pigments.

Cameron.—Bituminous coal, the only mineral commodity produced in Cameron County in 1956, was recovered from stripping operations by Rydesky Mines and by S. Brake Slyder.

Carbon.—A total of 10 companies reported production of anthracite in Carbon County in 1956. Producers were: A. R. Chamberlain Coal Co., Coaldale Mining Co., Inc., Glen Alden Corp., Gravine Coal Co., Jackson Coal Co., Lehigh Valley Coal Co., Panther Valley Coal Co., Spearhead Mining Co., Valley Stripping Corp., and Wat-Rap Coal Co. Underground mines, strip pits, and culm banks were operated in this county for anthracite.

North American Refractories Co., the only producer of stone in Carbon County, recovered ganister rock from the Little Gap quarry (Palmerton), crushing and using the stone in producing silica brick.

Alliance Sand Co. operated its pit and fixed plant near Palmerton, producing washed sand for use as building and paving material, fire or furnace sand, and engine sand. Butz Lumber Co. reported the output of washed sand, for use as building material, from a pit and fixed plant near Palmerton. Wagner Sand Co. produced building sand and paving sand and gravel from a pit east of Hazleton in Carbon County.

Panther Valley Coal Co., Inc. (Lansford), produced miscellaneous clay as a byproduct of anthracite mining and sold the clay for use in manufacturing lightweight aggregate.

Centre.—Three companies manufactured lime in Centre County. Standard Lime & Cement Co. (Pleasant Gap) produced only quicklime; National Gypsum Co. and Warner Co. (both of Bellefonte) produced both quicklime and hydrated lime. Primary uses of lime were for agricultural lime, various chemical and industrial limes, and as a building material.

Bituminous coal produced in Centre County was mined from underground and strip mines. Ten leading producers were: Robert Bailey, R. S. Carlin, Inc., Cherry Run Coal Mining Co., Inc., Elliot Coal Mining Co., H. & R. Coal Co., Morgan Coal Co., Penbrook Contracting Corp., River Hill Coal Co., Rice Bros. Coal Co., and C. J. Semple.

Limestone was recovered in 1956 in Centre County from 2 underground mines and 4 quarries. Limestone was produced from underground mines by Warner Co., Bellefonte Division, Bellefonte, and the crushed stone was marketed mainly as road material, railroad ballast, and dust for coal mines and for manufacturing lime and glass. Standard Lime & Cement Co. (Pleasant Gap) produced crushed limestone for use as stone sand and manufacturing lime. Limestone recovered from four quarries was sold or utilized primarily for road material and blast-furnace and open-hearth flux, by Whiterock Quarries, Pleasant Gap; National Gypsum Co., Bellefonte; Neidigh Bros. Limestone Co., Inc., State College; and Valley View Lime Co., Marion Township.

McFeely Brick Co. produced quartzite from its Port Matilda quarry and shipped the stone by railroad to its Latrobe plant for making silica brick. This firm sold its operation to General Refractories Co. (Philadelphia) in February 1956.

Harbison-Walker Refractories Co. operated the Blair open-pit mine, producing plastic fire clay. General Refractories Co. (Orviston) produced flint fire clay from an underground mine, and J. H. France Refractories Co. (Snow Shoe) produced flint fire clay from an open pit. The total production of the three companies was used for manufacturing refractory firebrick and block.

Chester.—W. E. Johnson, Inc., operated a quarry and crusher at Paoli, producing dimension limestone for use as rough construction stone and crushed limestone for road material. A quantity of road material was sold to local Government agencies. Warner Co. produced limestone from its Cedar Hollow quarry and crushed the stone at Devault, for use as blast-furnace flux, road material, agricultural purposes, and chemical uses and in manufacturing lime. Valley Forge Stone Co. (Malvern) produced crushed limestone from a quarry and crusher for use as blast furnace flux and road material. Bradford Hills Quarry, Inc., quarried limestone and crushed the stone at the Downingtown plant for use as road material, and sold some to local Government agencies.

Black diabase dimension stone recovered from a quarry at Saint Peters by French Creek Granite Co. was sold for use as building material. Basalt, quarried and crushed by Keystone Trappe Rock Co. (Cornog) and V. DiFrancesco & Sons (Devault), was sold primarily for use as road material and railroad ballast. Both companies sold stone as road material to various Government agencies. Dimension sandstone was quarried by Abram T. Minor from the Avon-Grove quarry, and Alfred V. Moulder, Avondale Colonial quarry, both at Avondale; and Albert Rotunno, Rotunno quarry, West Grove. The stone was sold or used by the producers as rough construction stone, rubble, building stone, and curbing and flagging stone.

The only producer of lime in Chester County was Warner Co. from its Cedar Hollow plant near Devault. Output of hydrated lime was sold principally as mason lime and quicklime for use as agricultural lime, in sewage treatment, and in manufacturing magnesite.

A. T. Harris Sand Co. operated a quarry and crusher at Honey Brook, producing ground sand for foundry uses.

Miscellaneous clay recovered from open pits by Phillip D. Cope (Lincoln University) was utilized for manufacturing flowerpots, and clays produced by McAvoy Vitrified Brick Co. (Phoenixville) were used for manufacturing common building brick.

Clarion.—Leading producers of bituminous coal in Clarion County were: Allison Engineering Co., H. N. McNutt Coal Co., Mac Coal Co., Mays Coal Co., E. M. Reed Contracting Co., Inc., Harold A. Siegel Coal Co., W. Pershing Stahlman Coal Co., Inc., W. P. Stahlman, G. I. Stiles & Co., and Zacherl Coal Co. Coal was mined from strip, underground, and auger mines.

Eight companies operated open-pit and underground clay mines, producing flint and plastic fire clay and miscellaneous clay, sold or used by producers for manufacturing refractory firebrick and block, mortar, and heavy clay products. Clay producers were: Niles Fire

Brick, Division Mexico Refractories Co., Lucinda Clay Co., Harbison-Walker Refractories Co., and J. F. Eiswerth Estate, all near Lucinda; New Bethlehem Tile Co., Climax Fire Brick Co., and Frank B. Pope Co., all at New Bethlehem; and McLain Fire Brick Co. (Division of H. K. Porter Co., Inc.), St. Charles.

Clearfield.—Leading producers of bituminous coal in Clearfield County in 1956 were: Robert Bailey, Benjamin Coal Co., Bradford Coal Co., Earl M. Brown Co., Cambria Clearfield Mining Co., Diamond T. Strip Mining Corp., The Morrisdale Coal Mining Co., Moshannon Smithing Coal Corp., Penbrook Contracting Co., and Shawville Coal Co. Bituminous coal was produced from underground, strip, and auger mines; the majority of the coal came from stripping.

Clearfield County was the leading clay-producing county in Pennsylvania in 1956, with 23 percent of the total value of clay output. Eighteen underground and open-pit clay mines were operated by 15 companies producing plastic and flint fire clay and miscellaneous clay. The clay was sold or used by the producers, mainly in manufacturing refractory firebrick and block and heavy clay products. Ten leading clay producers, in order of importance, were: Harbison-Walker Refractories Co., various mines in Clearfield County; General Refractories Co., Clearfield; Williamsgrove Clay Products Co., Inc., Bigler; North American Refractories Co., Curwensville; Hiram Swank's Sons, Inc., Boardman; W. K. Turner & Sons, Wallaceton; Blair Clay Products, Inc., Curwensville; Robinson Clay Products Co. of Pa., Clearfield; Falls Creek Refractories Co., Curwensville; and Laclede-Christy Co., Division of H. K. Porter Co., Inc., Henderson, Wallaceton, Clearfield, Osceola Mills, and Bigler.

Clearfield Limestone Corp. began a new sand and gravel operation near DuBois in February 1956. Quantities of paving gravel were recovered by this company, although adverse weather conditions affected installation of the plant and production of sand and gravel.

Exfoliated vermiculite was produced by Harbison-Walker Refractories Co. at one of its brick plants at Clearfield, utilizing the material for the manufacture of insulating firebrick.

Clinton.—Leading producers of bituminous coal in Clinton County in 1956 were: Joseph Antosh, Harry Batschelet Estate, Martin & Philip Barnyak, C. V. Fink & Son, R. C. Gillen, Parsons Bros., John E. Teeter, Thomson Coal Co., D. G. Wertz Coal Co., and Frank Winkelman. Bituminous coal was produced from underground, strip, and auger operations.

Lycoming Silica Sand Co. operated the Salona quarry and plant at Salona, producing crushed limestone usable as road material and railroad ballast.

North American Refractories Co. produced plastic fire clay from an underground mine near Lock Haven and flint fire clay from an open-pit mine near Renovo. All material was used for manufacturing refractory fire brick and block and a small quantity of mortar. Mill Hall Clay Products, Inc. (Castanea), produced miscellaneous clay from an open pit for use in making heavy clay products. Kelsey Mining Co. (Lock Haven) reported production of diaspore-type fire clay from an open pit, sold for manufacturing refractory high-alumina brick.

Columbia.—Output of anthracite in Columbia County was reported by operators of underground mines, strip pits, culm banks, and dredges. Ten of the leading producers were: Coates Coal Co., Hazlebrook Coal Co., L. & M. Coal Co., Miller Coal Co., Pine Ridge Mining Co., Raven Run Coal Co., Reading Anthracite Co., Sanchez Construction Co., Sullivan Trail Coal Co., and Susquehanna Collieries Division of The M. A. Hanna Co.

Bloomsburg Sand & Gravel Co. (Bloomsburg) recovered sand and gravel from a pit and processed the material at its local plant for use as building material.

Lloyd E. Eister produced miscellaneous clay from an open pit near Briar Creek for use in manufacturing heavy clay products.

Crawford.—W. L. Dunn (Cochranton) reported output of bank-run sand and gravel washed and screened at a local processing plant and marketed for use as paving material. Meadville Supply Co. produced washed building sand and gravel and a quantity of unwashed gravel for miscellaneous uses, from a bank and local plant at Saegertown. Conneaut Lake Sand & Gravel (formerly Sand & Gravel Supply) produced bank-run sand and gravel processed for use as building sand and gravel and paving sand and a quantity of unwashed gravel for building and paving material at Conneaut Lake. Fairfield Sand & Gravel Co. (Cochranton) produced sand for building and paving purposes, as well as molding sand.

Cumberland.—Locust Point Stone Quarries produced crushed limestone from a quarry and plant at Mechanicsburg, for use as road material and for agricultural purposes. Crushed limestone was recovered from quarries, for use as road material, by Valley Quarries Inc., Shippensburg; R. W. Smith & Son, Bowmansdale; and Hempt Bros., Camp Hill.

R. A. Bender & Son (Mount Holly Springs) and C. & L. Goodhart (Walnut Bottom) recovered sand from pits and processed the material for use as building sand at the local company plants. Hempt Bros. reported producing washed paving sand and gravel at its pit and plant at Camp Hill.

Kaolin, sold for use in making portland and other hydraulic cements, was recovered by Philadelphia Clay Co. from an open pit near Mount Holly Springs.

Dauphin.—Bethlehem Limestone Co. recovered limestone from a quarry at Steelton, crushing the stone at its local plant for use as blast-furnace flux, road material, railroad ballast, and stone sand and in refractories. Hoffman Bros. & Wilson, Inc., operated the Elder quarry at Harrisburg, producing limestone crushed for use as road material. Both companies sold crushed stone under contract to Government agencies. H. E. Millard Lime & Stone Co. produced limestone from its underground mine west of Palmyra in Dauphin County, crushed for use as blast-furnace flux, road material, railroad ballast, and agricultural purposes. Quantities of limestone were utilized at the company Swatara plant for manufacturing cement and quick and hydrated lime.

Seven companies produced anthracite in Dauphin County in 1956. Producers were: Dayton Breaker, Howard Koppenhaver, Reed & Weist, Rhoades Construction Co., Spring Glen Coal Co., Upper Dauphin Coal Co., and Wisconsino Washery, Inc. Underground

mines, strip pits, culm banks, and dredges were operated by these producers.

Bethlehem Limestone Co. produced miscellaneous clay from an open pit near Steelton and sold the material for use in manufacturing refractories for foundries and steelworks, and covering for underground pipelines. Glen-Gery Shale Brick Corp. (Harrisburg and Middletown) produced miscellaneous clay and used it for manufacturing building brick.

F. H. Downey, Inc., operated a dredge on the Susquehanna River near Harrisburg and produced molding sand. Paving sand and gravel was recovered from a pit and fixed plant by Highspire Sand & Gravel Co., Ltd. (High Spire).

Delaware.—Two stone quarries and plants operated by The General Crushed Stone Co. (Glen Mills) and V. DiFrancesco & Sons (Llanerch) yielded crushed basalt for use as road material and railroad ballast. Both companies sold stone to adjacent Government agencies for various uses. Lima Building Stone Quarry, Inc. (Lima), quarried irregular-shaped dimension granite for use as construction material. Dimension sandstone for use as rough construction and rubble, was produced by Media Quarry Co. (Media).

Sinclair Refining Co. produced brimstone as a byproduct in the liquid purification of gas by the Claus-type process at its Marcus Hook Refinery (borough of Trainor).

Crude perlite from Western United States was purchased by Perlite Products Co., processed at its local expanding plant at Primos, and sold for use in plaster, concrete, refractories, and horticultural products.

Elk.—Bituminous coal produced in Elk County was mined from underground, strip, and auger operations. Leading producers of bituminous coal were: Betta & Meixel, Blue Valley Coal Co., Brandy Camp Coal Co., Hard Coal Co., W. C. Miller, New Shawmut Mining Co., Perry & Vonslander, P. & N. Coal Co., Inc., Walburn Coal Co., and Wabash Ridge Corp.

Saint Marys Sewer Pipe Co. (St. Marys) produced plastic-type fire clay from an open pit, utilized at the local plant for making heavy clay products. Wm. J. Meyer produced plastic-type fire clay from an open pit near St. Marys and sold it for use in manufacturing firebrick.

Erie.—Peerless Mineral Products Co. reported production of unwashed molding sand from a pit near Springfield. Wagner Concrete Building Products (Erie) produced a quantity of prepared gravel for miscellaneous uses and sold its operation to A. Duchini Co. in December 1956. Building sand and gravel was mined by North Girard Concrete Works (Lake City). Nickel Plate Sand & Gravel Co. (near Fairview) recovered washed sand and gravel for use as construction and paving material and unwashed bank gravel for miscellaneous uses.

Reed-sedge and humus peat was produced by Corry Bog, Inc., from a bog near Corry.

Fayette.—Bituminous coal was produced in Fayette County from underground, strip, and auger mines—the major portion from strip mines. Leading producers were: Bridgeview Coal Co., Davidson-Connellsville Coal & Coke Co., Eastern Gas & Fuel Associates, Coal

Division; Eberly Coal & Coke Co., Latrobe Construction Co., Marsolino Construction Co., Menallen Coke Co., National Mines Corp., Republic Steel Corp., and United States Steel Corp.

Robert N. Matthews (Uniontown) reported production of plastic and flint fire clay; Big Savage Refractories, Division of Mexico Refractories Co. (Ohiopyle), plastic fire clay; and Harbison-Walker Refractories Co. (Ohiopyle), flint fire clay. Material from these three companies was sold or used by the producers for the manufacture of firebrick and block. Layton Fire Clay Co. (Layton) produced miscellaneous clay from open-pit and underground mines and utilized its production in manufacturing heavy clay products.

Output of limestone from the Lake Lynn quarry by Vesco Corp. was crushed at a portable plant for use as road material and dust for coal mines and for agricultural purposes. Crushed sandstone usable for road material was produced from a quarry and crusher by Connellsville Bluestone Co. near Scottdale. Quantities of the material were sold to State and local Government agencies. General Refractories Co. produced ganister rock from the Childs quarry at Layton, moving it by tramway to a nearby plant for use in manufacturing silica brick.

Sand and gravel washed and screened for building and paving purposes was recovered by dredging at Point Marion by McClain Sand Co.

Forest.—Tionesta Sand & Gravel mined building sand and gravel, paving sand, and gravel for miscellaneous uses from a pit at Tionesta and washed and screened the material at a local plant.

Franklin.—Crushed limestone sold primarily for use as road material, and railroad ballast and for agricultural purposes was recovered by 6 operators of 7 quarries and crushing plants. Producers were: New Enterprise Lime & Stone Co., Inc., Dry Run; Fry Coal & Stone Co., Williamson and Zullinger; Pinola Lime Co., Shippensburg; Valley Quarries, Inc., Chambersburg; and Baer & Martin, Orrstown. Quantities of limestone were sold under contract to Government agencies for road material.

Mount Cydonia Sand Co., Inc., and Caledonia Sand Co. (both near Fayetteville) produced washed sand from pits and fixed plants for use as building material. E. L. Dayhoff & Sons recovered a quantity of paving sand.

Frank L. Heinbaugh operated the Blue Spring Lime plant at Mercersburg and produced quicklime for agricultural purposes.

Fulton.—Rockhill Coal Co., the only producer of bituminous coal in Fulton County, mined coal from a strip operation.

Limestone was produced by H. B. Mellott Estate, Inc., from the Charleton quarry (Warfordsburg) and the Morton quarry (Big Cove Tannery). The limestone was crushed and sold for road construction and agricultural purposes. Quantities of the road material were sold under contract to Government agencies.

Quicklime was produced and sold for agricultural purposes by John P. Martz & Son (Hustontown).

Greene.—Major production of bituminous coal in Greene County was mined from underground mines, with a small quantity from strip mines. Leading producers were: The Buckeye Coal Co., Crucible Steel Co. of America, Duquesne Light Co., Emerald Coal & Coke

Co., Jimmie's Coal Co., Jones & Laughlin Steel Corp., Mather Collieries, Rosedale Coal Co., Rosedale Mining Co., and United States Steel Corp.

Miscellaneous clay, recovered from an open pit near Waynesburg by Greene County Brick & Stone Co., was used for manufacturing heavy clay products.

Huntingdon.—Fire or furnace sand and a quantity of sand for miscellaneous uses was produced by Alexandria Fire Clay Co. from a pit and local plant at Alexandria. Pennsylvania Glass Sand Corp. operated a quarry and crusher at Mapleton Depot, recovering sand for use as glass sand, molding sand, grinding and polishing sand, and engine sand and for miscellaneous uses. In addition, ground sand was produced primarily for use in making enamel, foundry molds, glass, and pottery and as an abrasive in a filler.

Tyrone Lime & Stone Co. quarried limestone from the Stover quarry east of Tyrone in Huntingdon County and crushed it at a local plant for use as road material and for agricultural purposes. Limestone recovered from a quarry at Union Furnace by Warner Co., Bellefonte Division, was crushed at a local plant and marketed for use as riprap, road material, and railroad ballast. New Enterprise Stone & Lime Co., Inc. (McConnellstown), quarried and crushed limestone for road material and sold a quantity under contract to Pennsylvania Department of Highways. Output of ganister rock, crushed for use in manufacturing silica brick, was quarried by Harbison-Walker Refractories Co. (Mount Union) and North American Refractories Co. (Three Springs).

Leading producers of bituminous coal in Huntingdon County in 1956 were: Ace Coal Co., Allen Coal Co., Kenneth Crotsley, Adam J. Black, Helm Coal Co., L. M. Hutcheson, Ramper & Schank, Warren L. Reed, Rockhill Coal Co., and Wrays Hill Coal Co. The coal was mined from underground and stripping operations.

Alexandria Fire Clay Co. produced and sold plastic fire clay recovered from an open pit near Alexandria.

Indiana.—The major output of bituminous coal produced in 1956 in Indiana County was from underground mines, followed by strip and auger mines, in order of importance. Leading producers were: Arcadia Co., Inc., Clearfield Bituminous Coal Corp., Conemaugh Mining Co., Crichton Coal & Coke Co., H. & H. Coal Co., Imperial Coal Corp., Morrisdale Coal Mining Co., P. & N. Coal Co., Pine Township Coal Co., Joseph Ragalini, and Rochester & Pittsburgh Coal Co.

Hiram Swank's Sons, Inc., produced plastic fire clay from the Swank No. 6 underground mine near Clymer and utilized the clay for manufacturing pouring refractories such as sleeves, nozzles, stoppers, etc.

Smicksburg Lime (Smicksburg) mined a small quantity of crushed limestone from an underground mine for agricultural purposes.

Jefferson.—Leading bituminous-coal producers in Jefferson County were: Anita Coal Mining Co., Gregg & Riddle Coal Co., Knisley Coal Co., F. A. Lorenzo, Rudolph Lundblad, Northwestern Mining & Exchange Co., P. & N. Coal Co., St. Marys Sewer Pipe Co., Spencer & Marsh Coal Co., Inc., and Worthville Coal Co. The coal was mined from underground and stripping operations.

Hanley Co. produced plastic fire clay from an underground mine near Summerville, and The Brockway Clay Co. (Brockway) produced plastic fire clay and miscellaneous clay. The entire output of clays was used in manufacturing heavy clay products. Flint fire clay was recovered from an underground mine near Brookville by Henry O'Neill & Co. and marketed for use in the manufacture of refractory firebrick and block.

Juniata.—Limestone quarried and crushed principally for road construction was produced by W. N. Quigley (Mifflintown) and Juniata Limestone Co. (McAlisterville). National Refractories Division, Mexico Refractories Co. quarried ganister rock and utilized the crushed stone in manufacturing silica brick at its Van Dyke plant (Thompsontown).

Fulkroad Lime Quarry (near Mifflintown) produced a small quantity of quicklime for agricultural purposes.

Lackawanna.—Anthracite (the only mineral commodity produced in Lackawanna County in 1956) was mined from underground mines, strip pits, and culm banks. Leading producers were: Bellevue Coal Co., DeAngelis Coal Co., DeAngelis Supreme Anthracite Co., Gillen Coal Co., Hudson Coal Co., Moffat Coal Co., Northwest Coal Co., Perry Construction Co., Turnpike Coal Co., and Village Slope Coal Co.

Lancaster.—Limestone was recovered from 15 quarries operated by 13 companies in Lancaster County in 1956. Two of the companies—J. C. Showalter (Blue Ball) and L. F. Zook & Sons (Bareville)—produced dimension limestone as rough construction stone and crushed limestone as road material. Crushed limestone, principally for use as road material and stone sand, for agricultural purposes, and for manufacturing lime was produced by The J. E. Baker Co., Bainbridge; Binkley & Ober, Inc., East Petersburg; David M. Burkholder, Martindale; Erbs Limestone Quarry, Lititz; J. Miller Eshleman, Landisville; A. G. Kurtz & Sons, Inc., Denver; Landis Stone Meal Co. and Heisey Bros., both at Rheems; Ivan M. Martin, Inc., Blue Ball; D. M. Stoltzfus & Son, Inc., Quarryville and Talmage; and Bradford Hills Quarry, Inc., Lititz, and west of Morgantown in Lancaster County.

The J. E. Baker Co. manufactured dead-burned dolomite at its Billmyer plant near Bainbridge and marketed it as refractory material. Amos K. Stoltzfus produced quicklime for agricultural purposes at the Maxwell Hill plant 2 miles west of Morgantown.

Anthracite was recovered in Lancaster County by dredging operations.

Milton Grove Sand, Inc. (Milton Grove), and Hempt Bros. (Elizabethtown) recovered sand from pits and processed it for use as paving material.

Miscellaneous clay, utilized entirely for the manufacture of heavy clay products, was recovered from open pits by Glen-Gery Shale Brick Corp., Ephrata, and Lancaster Brick Co., Lancaster. Plastic fire clay was recovered from an open pit near Narvon by Whitaker Clay Co. and marketed for use in the manufacture of high-alumina refractories.

Lawrence.—The Bessemer Limestone & Cement Co. cement plant at Bessemer produced air-entrained Types I–II, non-air-entrained Types I–II, Type III, portland-pozzolan, and waterproof-portland cement. Mortar cement also was produced and marketed under the

trade name "Bessemer Mortar." Medusa Portland Cement Co. produced cement from its plant at Wampum. Production consisted of Types I–II, and Type III, waterproof-portland cement, and "Brikset" mortar cement.

A quarry and crusher operated by Michigan Limestone Division, United States Steel Corp., at Hillsville produced crushed limestone for use as blast-furnace and open-hearth flux and road material and for manufacturing cement. Crushed limestone for use as road material and in manufacturing cement was produced by The Bessemer Limestone & Cement Co. from a quarry and crusher at Bessemer. New Castle Lime & Stone Co. worked its quarry and crusher at Mahoning Township, producing crushed limestone usable for road construction, agricultural purposes, and dusting for coal mines. Medusa Portland Cement Co. recovered limestone from its quarry and crushed the stone at its plant at Wampum, for manufacturing cement.

Bituminous coal produced in Lawrence County was obtained from underground and strip mines. Leading producers were: Ambrosia Coal & Construction Co., Bessemer Limestone & Cement Co., Clark & Kechmar Coal Co., Corry Excavating & Mining Co., Dodds Coal Co., J. H. Filby Coal Co., Ivywood Coal Co., Keystone Valley Coal Co., Lake Erie Mining Enterprises, Inc., and West Freedom Mining Co.

Keystone Sand & Gravel Co. (New Castle) operated an open-pit mine producing miscellaneous clay and marketed it for use in manufacturing refractories. Plastic fire clay and miscellaneous clay were recovered from open pits by Metropolitan Brick, Inc. (near Bessemer), and Fenati Brick Co., Inc. (New Castle), for use in manufacturing heavy clay products.

Sand and gravel recovered from a pit at West Pittsburgh by Mahoning Valley Sand Co. was processed at the local plant for use as construction and paving material, and a quantity of gravel for fill. Superior Sand & Supply Co. reported output of paving sand and gravel from a pit and plant near Eastbrook. United States Army Corps of Engineers (Philadelphia), purchased a quantity of sand and gravel from commercial producers for use in concrete construction.

Zonolite Co. produced crude vermiculite from mines in Western United States and imported a quantity from South Africa, producing exfoliated vermiculite at its plant at Ellwood City.

Lebanon.—Lebanon was the only county in the State in 1956 in which metallic ores were produced. The Cornwall mine and Lebanon concentrator plant operated by Bethlehem Cornwall Corp., a subsidiary of Bethlehem Steel Co., yielded magnetite iron ore from which gold, silver, copper, cobalt, and pyrite were recovered as byproducts.

Of the 6 companies producing crushed limestone in Lebanon County, 3 reported output for road material only—Fiala Crushed Stone Corp. and Becker Bros. (both of Annville) and Pennsylvania Aggregates, Inc. (Cornwall). Calcite Quarry Corp. produced crushed limestone usable as flux, and road material from a quarry and crusher near Lebanon. H. E. Millard Lime & Stone Co. produced (from its quarry and crusher at Annville), crushed limestone sold for use as blast-furnace flux, road material, and soil conditioner and for manufacturing cement. This company also sold a quantity of limestone

to Government agencies for road construction. Crushed limestone was recovered by Fiala Crushed Stone Corp. from the White Hall quarry at Annville for use in open-hearth plants and in manufacturing cement. North American Refractories Co. operated the Womelsdorf quarry and plant, producing crushed ganister rock for manufacturing silica brick.

The only producer of lime in Lebanon County was H. E. Millard Lime & Stone Co. Quick and hydrated lime was manufactured at the Annville plant and marketed primarily as mason lime and agricultural lime, for use in open-hearth and electric furnace linings and for water purification.

Dredging operations were the only source from which anthracite was recovered in Lebanon County.

Lehigh.—Four companies reported manufacturing cement in Lehigh County from cement rock and limestone produced from company-owned quarries or purchased from other stone producers. Cement manufacturers were: The Whitehall Cement Manufacturing Co., Cementon; Coplay Cement Manufacturing Co., Coplay; Giant Portland Cement Co., Egypt; and Lehigh Portland Cement Co., Ormrod and Fogelsville. The major portion of the cement produced was air-entrained and non-air-entrained Types I–II and Type III portland cements and mortar cement, all by the dry process.

Production of crushed limestone from a quarry and crusher at Ormrod, for use in road construction, was reported by Lehigh Stone Co. Quantities of the material were sold to local Government agencies.

Slate quarried in Lehigh County in 1956 was sold for a variety of uses, primarily for roofing, structural, and sanitary products, blackboards, and flagging stone. The only producer of slate was Penn Big Bed Slate Co., Inc., near Slatington.

Robert A. Reichard, Inc. (Allentown), crushed oystershell for use as poultry grit.

Pennsylvania Perlite Corp., at its expanding plant near Allentown, produced expanded perlite for use in the manufacture of plaster aggregate, concrete aggregate, and industrial aggregates.

Luzerne.—Luzerne County in 1956 was by far the largest anthracite-producing county in the State. Ten of the larger producers were: John G. Connell, Glen Alden Corp., Hudson Coal Co., Jeddo-Highland Coal Co., Kehoe-Berge Coal Co., Knox Coal Co., Lehigh Valley Coal Co., Number Fourteen Coal Co., Payne Coal Co., and Susquehanna Collieries Division of The M. A. Hanna Co. The coal was produced at underground mines, strip pits, culm banks, and dredges.

Dimension sandstone, recovered from a quarry at White Haven by Hayes Bros. Stone Co., was sold or used as rubble, dressed architectural stone, and flagging stone. The General Crushed Stone Co. (White Haven) quarried and crushed sandstone for use as road material and railroad ballast. A small quantity of dimension sandstone for use as rubble and of crushed sandstone for use as riprap and road material was recovered from the North Mountain quarry in Sweet Valley by Coon Certified Concrete. The General Crushed Stone Co. and Coon Certified Concrete marketed sandstone to various Government agencies.

Seven companies were active in Luzerne County in 1956, producing sand and gravel for use as paving and building material, as engine sand, and as sand for miscellaneous uses. Producers were: Airport Sand & Gravel, Wyoming; American Asphalt Paving Co., Chase (Jackson Township); Glendale Sand & Stone Co., Avoca; Frank B. Sgarlat Estate, Kingston; Honey Hole Sand & Stone Co. and Herman Cunfer, both of Hazleton; and White Haven Lumber Co., White Haven. A large tonnage of sand and gravel was sold to local Government agencies for use in highway construction.

Blue Ridge Soil Pep Co., Inc., recovered humus peat and Pennsylvania Peat Moss, Inc., recovered moss and humus peat, both from bogs near White Haven.

Miscellaneous clay, recovered from an open pit near Hazleton by Hazleton Brick Co., was utilized in manufacturing building brick.

Lycoming.—J. A. Eck & Sons, Inc., and Lycoming Silica Sand Co. recovered sand and gravel from pits in Montoursville and processed the material at local plants for construction and paving purposes. Lycoming Silica Sand Co. also produced molding sand, sand for use in anthracite preparation, and paving sand.

Muncy Lime Products produced a quantity of crushed limestone from its Chippewa quarry and plant at Muncy for manufacturing agricultural lime. Lycoming Silica Sand Co. produced limestone, crushed for use as road material and agricultural purposes, from the Lime Bluff quarry and plant near Muncy and the Pine Creek quarry and plant near Jersey Shore (purchased from Pine Creek Lime & Stone Co. in February 1956). Callahan & Haines Stone Co. produced miscellaneous dimension stone as flagging stone from a quarry and plant at Slate Run. John T. Morgan (also of Slate Run) reported a small quantity of dimension sandstone for flagging stone.

Small quantities of bituminous coal were produced from 4 underground mines and 1 strip pit by O. R. Corson, J. F. Emig, Fisher & Smith Coal Corp., Kaznowski & Kaznowski, and Thomas Bros.

Keystone Filler & Manufacturing Co. (Muncy) and Penn Paint & Filler Co. (Antes Fort) produced and prepared rottenstone by crushing, drying, and pulverizing. Both companies sold the material for use as abrasive and filler.

Keystone Filler & Manufacturing Co. (Muncy) marketed its production of miscellaneous clay as a paint filler.

McKean.—Kaul Clay Products Co. produced plastic fire clay from its pit at Clermont for use in manufacturing hot-tops for steel mills and heavy clay products. Plastic and burley-type fire clays produced by Kness Bros. (Mount Jewett) were marketed for use in manufacturing refractories. Miscellaneous clay produced by Hanley Co. (Lewis Run) was utilized by the company for use in manufacturing heavy clay products.

Three operators of strip mines in McKean County produced bituminous coal. Producers were: Bowland Contractors, Kaul Clay Products Co., and P. & K., Inc.

Sand (mined by C. L. McGavern, Jr., from a pit and plant at Eldred) was processed and sold as molding sand.

Mercer.—Underground and strip mines were operated in Mercer County as sources of bituminous coal. Producers were: Coyer Coal Mines, Estate of Geo. Bobo, Bowie Coal Co., The Buckeye Coal Co.,

Center Coal Co., C. A. Fisher Mining Co., Thomas B. Mathieson, Mercer Coal Producing Co., Earl M. Reed Coal Co., and Turner Bros. Construction Co.

Sand and gravel was recovered from pits by four producers and processed for various uses, principally as paving and building material and sand for fill. Producers were: Robert L. Seger, West Middlesex; Seidle Sand & Gravel Co., Mercer; Transfer Sand & Gravel, Transfer; and Sharon Builders Supply Co., Mercer County. White Rock Silica Sand Co. operated the Whiterock quarry and preparation plant at Greenville, producing ground sand principally as filler sand, foundry sand, and beach sand and for use on golf courses.

D. M. Boyd and Moore's Peat Humus Co. (both near Leesburg) and Arthur Minshull (Jackson Center) all recovered humus-type peat from bogs.

Welty M. Smeltzer recovered dimension sandstone from the Rock Kastle quarry north of Volant in Mercer County. The stone was used for interior and exterior decorating; some of the stone is found with flower patterns and in multicolored stone in red, soft pink, yellow, brown or chocolate and some in mottled beige with dark stripes.

Mifflin.—Miller Silica Sand Co. operated a pit and fixed plant near Burnham, producing sand for molding and building material and engine sand and for miscellaneous uses. Pennsylvania Glass Sand Corp. produced sand from an open pit and processed it at a local plant at McVeytown for use as glass sand, molding sand, grinding and polishing sand, and engine sand and for miscellaneous uses. James R. Kline's Sons recovered sand by dredging along the Juniata River near Lewistown for building and paving material.

Bethlehem Limestone Co. reported output of crushed limestone from its quarry and crusher at Naginey, marketed principally for use as blast-furnace flux, roadstone, and stone sand. A portion of the material was sold under contract to Government agencies for road construction. Output of quartzite from a quarry at Hawstone was utilized by Haws Refractories Co. for producing silica brick at the company plant.

Quicklime (manufactured and sold as agricultural lime) and hydrated lime for use in making silica brick were reported by Lewistown Lime Co. from its plant near Reedsville. Harry T. Ehrenzeller (McVeytown) produced quicklime for agricultural uses.

Monroe.—Coolbaugh Sand & Stone, Inc. (Tobyhanna), operated a pit and plant, producing sand and gravel for building and paving purposes. Sheesley Minerals, Inc., recovered sand from a pit and prepared it at its Kunkletown plant for use as paving and road sand. Both companies sold the entire output, the major portion to the Pennsylvania Department of Highways for road construction. Steward White and Clyde White (Stroudsburg) produced a quantity of building sand. United States Army Corps of Engineers (Philadelphia), purchased a quantity of sand and gravel as concrete aggregate from commercial producers.

Crushed limestone marketed entirely for road construction, was produced from a quarry and crusher by T. P. Rogers Stone Co. (Stroudsburg). This quarry and plant was sold to Hamilton Stone Co. in July 1956. Hamilton Stone Co. also operated a quarry and

plant at Bossardsville, producing crushed limestone for use as road material and in cement manufacture.

Montgomery.—Montgomery County continued in 1956 to rank first in stone output, although production and value decreased compared with 1955. Crushed limestone was produced by Stowe Trap Rock Co. (Oreland) for use as riprap, road material, and railroad ballast. Glasgow, Inc. (Conshohocken) and Bradford Hills Quarry, Inc. (Norristown), produced crushed limestone for road construction. G. & W. H. Corson, Inc., and Bethlehem Limestone Co. operated a quarry and crusher at Plymouth Meeting and Bridgeport, respectively, producing and marketing crushed limestone for blast-furnace and open-hearth flux, road material, and stone sand and in manufacturing lime. R. K. Kibblehouse produced basalt from a quarry and crusher at Perkiomenville for use as road material and marketed quantities to State and local Government agencies.

Rough and dressed dimension basalt for use as building material and crushed and broken basalt for railroad ballast were recovered at Montgomeryville by Montgomery Stone Co., Inc. Marcolina Bros., Inc., operated the Hillcrest quarry (Cheltenham Township), utilizing its production of irregular dimension granite for construction work. M & M Stone Co. quarried argillite-type miscellaneous stone for use as road material from a quarry at Harleysville. A. Manero & Sons (Glenside) produced silica rock from the Cove Hill quarry, as rough and dressed building stone. Fire Stone Products Co., Inc. (Glenside), quarried dimension quartzite for rough architectural blocks and crushed stone for furnace or converter lining. William Bambi & Sons (Norristown) produced dimension sandstone sold for use in rough construction work. Crushed sandstone usable for road material was produced and sold by Irvin B. Gill (Collegeville).

Allentown Portland Cement Co. produced cement rock and limestone at its quarry at West Conshohocken for use in manufacturing cement at the No. 2 plant. Production consisted of Types I–II, air-entrained, and non-air-entrained portland cements and some mortar cement.

Corsons Lime plant (Plymouth Meeting) was operated by G. W. H. Corson, Inc., for manufacturing lime. Quicklime and hydrated lime were produced and marketed for use as building lime, refractory material, and various chemical and other industrial limes.

Both miscellaneous and fire clays were produced from five open-pit mines; miscellaneous clay was the more important commodity. Robinson Clay Product Co. (near Pottstown) produced both plastic fire clay and miscellaneous clay for use in manufacturing heavy clay products. Other producers included The Keller-Whilldin Pottery Co., North Wales; Norristown Brick Co., and Harry R. Shaffer, both at Norristown; and Lansdale Brick Products Co., Lansdale. The output of these four companies was utilized for manufacturing art pottery, flowerpots, glaze slips, and heavy clay products.

Wm. Bambi & Sons, Inc., produced washed sand for use as building material from a pit and local plant at Norristown.

Refractory & Insulation Corp. produced expanded perlite at its expanding plant at Port Kennedy and utilized the perlite for manufacturing industrial insulation material.

Keasbey & Mattison Co. (Ambler) and Philip Carey Manufacturing Co. (Plymouth Meeting) processed raw dolomite, producing magnesium carbonate, magnesium oxide, and magnesia insulation.

Montour.—Limestone was recovered fom the Grovania quarry and crushed at the local plant by Mausdale Quarry Co. (Danville) and Lycoming Silica Sand Co. (from the Milton quarry and plant east of Milton, in Montour County), primarily for road construction. The Milton quarry was purchased from Narehood Bros., Inc., in May 1956. Both producers sold some of the material to Government agencies for road construction.

A small quantity of burned lime for agricultural uses was produced and sold by Glen H. Follmer near Washingtonville.

Northampton.—Northampton remained the leading cement-producing county in Pennsylvania in 1956 and showed a large increase in tonnage and value compared with 1955. Ten companies reported manufacturing cement from cement rock and limestone, either purchased or quarried at local company quarries. Producers were: Alpha Portland Cement Co., Martins Creek; Dragon Cement Co. and Universal Atlas Cement Co., both of Northampton; Hercules Cement Corp., Stockertown; Keystone Portland Cement Co., Bath; Lehigh Portland Cement Co., Sandts Eddy; Lone State Cement Corp. and Nazareth Cement Co., both of Nazareth; National Portland Cement Co., Bethlehem; and Penn-Dixie Cement Corp. plant No. 4 at Nazareth, plant No. 5 at Bath, and plant No. 6 at Penn Allen. The major output from these companies was comprised of Types I–II, Type III, both air-entrained and non-air-entrained portland cements and smaller quantities of masonry cements.

Production of slate in Northampton County in 1956 contributed a major portion of Pennsylvania's output and of Northeastern States production. Leading producers of slate were: Diamond Slate Co., Inc., Stephens-Jackson Co., Doney Slate Co., and Anthony Dally & Sons, Inc., all of Pen Argyl; D. Stoddard & Sons, Inc., and Albion Vein Slate Co., both of Plainfield Township; Parsons Bros. Slate Co., and General Slate Co., both of Windgap; North Bangor Slate Co., Bangor; and Capitol Slate Co., Inc., East Bangor. The processed slate was marketed for a variety of uses, primarily for roofing, blackboards and bulletin boards, structural and sanitary products, and billiard-table tops.

Crushed limestone for use as road material, railroad ballast, and stone sand was recovered from a quarry at Bethlehem by Bethlehem Steel Co. The Trumbower Co., Inc., produced limestone from a quarry and crushed the stone at Nazareth for road construction.

Sand and gravel was produced by open-pit methods by W. J. Lowe & Sons (Martins Creek) for use as concrete aggregate and by Portland Sand & Gravel Co. (Portland) for use as building and paving material. Portland Sand & Gravel Co. also produced gravel for railroad ballast, and a portion of its production was produced under contract to local Government agencies for use in road construction.

Anthracite in Northampton County was recovered by dredges.

Northumberland.—Ten leading anthracite-producing companies in Northumberland County were: Boslego Coal Co., C. & F. Trucking & Loading Contractors, C. & J. Coal Co., M. & B. Coal Co., Raven Run

Coal Co., Reading Anthracite Co., Sayre Contracting Co., Stevens Coal Co., Susquehanna Collieries Division of The M. A. Hanna Co., and West Cameron Coal Co., Inc. Coal was produced from underground mines, strip pits, culm banks, and dredges.

Three producers of clays operated open pits in Northumberland County, producing miscellaneous clay, used in manufacturing heavy clay products and as a filler in making linoleum, oilcloth, and phonograph records. Companies active during the year were Watsontown Brick Co., Watsontown Mineral Products Co., and Glen-Gery Shale Brick Corp. (all at Watsontown).

Limestone, recovered from a quarry at Herndon by Eugene Meckley, was crushed at a local plant and sold for road construction and agricultural purposes. Susquehanna Quarry Co. (Dalmatia) produced crushed traprock sold as riprap, concrete aggregate, roadstone, and railroad ballast. Quantities of road material were sold to local Government agencies.

M. E. Wallace Co. (Sunbury) produced molding sand from a pit and local plant. Wilsons Sand Plant (Milton) produced washed sand for building and miscellaneous uses.

Burned lime produced by Clyde Starook near Sunbury was sold for use as agricultural lime and marketed within a 50-mile radius.

Perry.—Bradford Hills Quarry, Inc. (Newport), reported output of crushed limestone from a quarry and crusher for use as road material. A quantity was sold to local Government agencies for road construction.

Philadelphia.—The Liberty Corp. operated a dredge on the Delaware River near Philadelphia and sold the washed and screened sand and gravel for use as building material. A quantity of the gravel also was sold to local Government agencies. United States Army Corps of Engineers (Philadelphia) purchased a quantity of sand and gravel from commercial producers for use in concrete construction.

Atlantic Refining Co. recovered hydrogen sulfide as a byproduct in the liquid purification of gas at its plant in Philadelphia.

Potter.—Oswayo Flag Stone Co. (Oswayo) reported a quantity of miscellaneous dimension stone recovered from its quarry, and sold for use as flagging stone. Dimension sandstone for use in rough construction and as architectural and flagging stone was quarried by Penn Kress Flagstone Co., Inc., Austin.

Schuylkill.—Anthracite in Schuylkill County was mined from underground, strip-pit, culm-bank and dredge operations. Leading producers were: Capparell Stripping & Construction Co., Carbonizing Coal Co., Coaldale Mining Co., Inc., Gilberton Coal Co., Locust Creek Co., Inc., Mammoth Coal Co., Reading Anthracite Co., Saint Clair Coal Co., Stevens Coal Co., and Tunnel Ridge Coal Co.

Refractory Sand Co., Inc. (near Andreas), mined and processed sand usable for paving, fire, or furnace sand and for miscellaneous uses.

Huss Contracting Co. took over operation of the Andreas Quarry Co. quarry at Andreas in April 1956, producing crushed limestone for use as road material. Crushed quartzite for manufacturing silica brick was mined by Harbison-Walker Refractories Co. from a quarry at Andreas.

Auburn Brick Co. produced miscellaneous clay from an open pit at Auburn and utilized it for manufacturing heavy clay products.

Coaldale Mining Co. operated underground and open-pit mines at Coaldale, producing miscellaneous clay marketed for use in manufacturing lightweight aggregate.

Snyder.—Miscellaneous clay produced by Glen-Gery Shale Brick Corp. (Beavertown) and Paxton Brick Co. (Middleburg) was utilized by the companies in manufacturing heavy clay products.

John C. Stahl acquired ownership during 1956 of a quarry and crusher at Middleburg, formerly operated by National Limestone Quarry; production consisted of crushed limestone for use as road material and agricultural purposes. Limestone recovered from a quarry by Carton Comfort (Mount Pleasant Mills) was crushed and marketed for use in the manufacture of lime.

A small quantity of "burned" lime for agricultural purposes was produced and sold by Carton Comfort at Freeburg.

A small quantity of anthracite produced from dredging operations was reported in Snyder County.

Somerset.—Bituminous coal was mined in Somerset County by underground and stripping methods. Leading producers were: Bird Coal Co., Costantino Coal Co., Cambria Fuel Co., Croner, Inc., Loyal Hanna Coal & Coke Co., Ponfeigh Smokeless Coal Co., Pine Hill Smokeless Coal Co., The Berwind-White Coal Co., Reitz Coal Co., and the Saxman Coal & Coke Co.

Fire clay used in manufacturing refractories and heavy clay products was recovered from underground and open-pit mines by W. S. Compton Brick Co., Inc., Salisbury; Otto Brick & Tile Works, Springs; Hiram Swank's Sons, Inc. (Swank Mines Nos. 15 and 23), Holsopple; and General Refractories Co. Neilan Engineers (Shanksville) produced flint fire clay from an open pit and sold the clay for manufacturing refractories.

Somerset Limestone Co., Inc., produced crushed limestone obtained from the Bakersville quarry at Somerset for road construction. Keystone Lime Co. produced limestone from an underground mine and quarry at Springs for agricultural purposes and as an asphalt filler. Friedens Block Co. (Somerset) quarried a small quantity of sandstone crushed for miscellaneous uses; this company sold its operation to Union Mining Co. in August 1956.

Sand only was produced in Somerset County by Boswell Sand Co. (near Jenners, Boswell Borough), for paving use, and by Union Mining Co. (Somerset) for building material and fire or furnace sand. Friedens Block Co. (Somerset) and Robert D. Shaulis (Boswell) also produced small quantities of building sand.

Sullivan.—Bliss Coal Co.—the only mineral-producing company in the county—reported a quantity of anthracite from a stripping operation.

Susquehanna.—Edwin J. Evans (Lenox Township) and H. V. Hartley (Lenoxville) quarried dimension sandstone for use as rubble and flagging stone. Keelor Supply Co. (Royal) produced crushed sandstone for road material and sold a quantity to local Government agencies. Three companies quarried dimension sandstone (bluestone) for use as flagging stone: Gordon E. Jackson, New Milford; Wade H. Swingle, Jr., Harford; and Lee A. Wilbur Flagstone Co., Kingsley. J. G. Robinson purchased sandstone from various stone producers in Susquehanna County and processed it at the Fort

Washington (Montgomery County) plant. The prepared stone was sold for flagging.

Tioga.—Bituminous coal (the only mineral commodity produced in Tioga County in 1956) was mined from underground and strip mines. Leading producers were: Fall Brook Coal Mining Co., Guy Coal Co., E. M. Hart & Son, Walter Hunter, Jones & Brague, Martin & Lawson, Stempeck Coal Co., Sterling Coal Co., and Joseph & James Williams.

Union.—Production of crushed limestone was reported by Faylor Lime & Stone Co. from a quarry and crusher at Winfield and marketed for use as road material and agricultural purposes and by John L. Iddings (Mifflinburg) for road construction. Both producers sold a portion of the road material to Government agencies.

Venango.—Leading producers of bituminous coal in Venango County in 1956 were: Bowie Coal Co., Boyles Coal & Supply Co., W. G. Brown Coal Co., C. & M. Contracting Co., Penn Grove Coal Co., Persch Bros. Coal Co., Earl M. Reid Coal Co., Glenn Surrena, Tasa Coal Co., and A. P. Weaver & Sons. The coal was produced at underground and strip mines.

Sand production was reported by Industrial Silica Corp. (Utica); it was prepared at a local plant for use as molding sand. Oil City Sand & Gravel Co. (Oil City) recovered building and paving sand and gravel by dredging and sold a quantity of it to the Pennsylvania Department of Highways for road construction. Rybak Kraft, Inc. (Cooperstown), produced washed and screened sand for use in manufacturing concrete blocks and sold a quantity of unscreened paving gravel to a local Government agency. This company only operated 6 months during the year owing to the cold weather.

Warren.—Building and paving sand and gravel were recovered from an open pit and processed at a local plant by General Concrete Products near Warren. Walter Schatzle (Warren) produced a quantity of building sand and gravel and gravel for use as a rough filler.

Washington.—Washington County was the leading bituminous coal-producing area in the State in 1956. The major portion of the coal recovered was from underground mines, followed by strip and auger mines. Leading producers were: Bethlehem Steel Co., C. & J. Coal Co., Harmon Creek Coal Corp., Jones & Laughlin Steel Corp., Mathies Coal Co., National Steel Corp., Ontario Mining Co., Pittsburgh Coal Co., Republic Steel Corp., and United States Steel Corp.

Miscellaneous clay for use in manufacturing heavy clay products was mined from open pits by Monongahela Clay Products Co., Monongahela; and Westmoreland Clay Products Co. and Donley Brick Co., both near Washington.

Wayne.—Wayne Concrete & Sand Works produced crushed sandstone for use as road material from a quarry and plant at Lake Ariel.

A pit near Lake Ariel, operated by Wayne Concrete & Sand Works, yielded sand and gravel prepared at the local plant for use as building and paving material. A quantity of sand for bridge construction was sold to Pennsylvania Department of Highways.

Westmoreland.—Ten leading producers of bituminous coal in Westmoreland County were: Allegheny Pittsburgh Coal Co., Bowman Coal Co., Delmont Fuel Co., Eagle Coal Co., Jamison Coal & Coke Co., Marco Coal Co., Pine Run Co., Stewart Coal & Coke Co.,

Westmoreland Coal Co., and Wyatt-Seanor Coal Co. The major production of the bituminous coal came from underground mines followed by strip and auger mines.

Lynn Quarry (Rostraver Township) yielded miscellaneous dimension stone sold as flagging stone. Dimension sandstone, sold for rubble, was recovered from quarries by Ray Branthoover and J. C. Beaumont, both north of Belle Vernon in Westmoreland County. Eidemiller Enterprises, Inc. (Greensburg), produced crushed sandstone from blue rock, and Latrobe Construction Co. produced crushed sandstone from the Barbara quarry at Latrobe; both sold the stone for road material.

Westmoreland Clay Products Co. produced miscellaneous clay for use in manufacturing heavy clay products from its open pit near Youngwood. Regional Refractories, Inc., operated its open pit near Youngwood, producing plastic fire clay for use in manufacturing refractory firebrick and block.

Wyoming.—Two commercial producers of sand and gravel—East Falls Sand & Gravel (near Tunkhannock) and Wyoming Sand & Stone Co. (Falls) operated pits and preparation plants, washing and screening the material for building and paving uses. Wyoming Sand & Stone Co. also prepared engine sand. Both companies sold quantities of sand and gravel to Pennsylvania Department of Highways and local Government agencies for road construction.

J. G. Robinson purchased sandstone from various stone producers in Wyoming County and processed the stone at the Fort Washington (Montgomery County) plant. The prepared stone was sold as flagging stone.

York.—Medusa Portland Cement Co. reported output of cement manufactured at its York plant. Portland cement Types I–II, Type III, waterproof-white, and gray and quantities of masonry cement were marketed under the trade names of "Brikset" and "Stoneset."

Nine stone producers were active in York County in 1956, reporting output of crushed limestone sold or used primarily as road material and riprap, for agricultural purposes, and in manufacturing glass, lime, and cement. Producers were: The J. E. Baker Co., Botts; National Gypsum Co., Standard Concrete Products Co., Medusa Portland Cement Co., White Pigment Corp., York Stone & Supply Co., and Eli Z. Zinn, Inc., all of York; Thomasville Stone & Lime Co. and Lincoln Stone, Inc., both of Thomasville.

The York plant of National Gypsum Co. was active during the year, producing both quicklime and hydrated lime, manufactured for a variety of uses, including agricultural lime, insecticides, disinfectants, paper, sewage treatment, and water purification. The J. E. Baker Co. produced dead-burned dolomite at its York plant near Botts for use as refractory material.

The Funkhouser Co. (Delta) was the only slate producer in York County in 1956. The slate was crushed and ground at its local mill and sold as granules and flour.

Production of miscellaneous clay from open-pit mines was utilized by Glen-Gery Shale Brick Corp. for manufacturing heavy clay products at its York Colonial Division plant and Spring Garden Division plant (both near York).

Sand and gravel for use as paving material was recovered from a pit near York Haven by Pennsylvania Supply Co. Neuman Sand & Supply Co. produced sand from a pit and preparation plant at York, principally as building sand, with smaller quantities as molding and fire or furance sand.

General Mining Associates operated an open-pit mine and plant near Glenville, producing and grinding mica, which was utilized in making paints, rubber (mold lubricants), and welding rods.

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